AMX®

Operation/Reference Guide

MAX Servers

HT Home Theater and
MMS Multimedia Servers

MAX by AMX®

AMX Limited Warranty and Disclaimer

AMX warrants its products to be free of defects in material and workmanship under normal use for three (3) years from the date of purchase from AMX, with the following exceptions:

• Electroluminescent and LCD Control Panels are warranted for three (3) years, except for the display and touch overlay components that are warranted for a period of one (1) year.

• Disk drive mechanisms, pan/tilt heads, power supplies, and MX Series products are warranted for a period of one (1) year.

• AMX Lighting products are guaranteed to switch on and off any load that is properly connected to our lighting products, as long as the AMX Lighting products are under warranty. AMX does guarantee the control of dimmable loads that are properly connected to our lighting products. The dimming performance or quality cannot be guaranteed due to the random combinations of dimmers, lamps and ballasts or transformers.

• Unless otherwise specified, OEM and custom products are warranted for a period of one (1) year.

• AMX Software is warranted for a period of ninety (90) days.

• Batteries and incandescent lamps are not covered under the warranty.

This warranty extends only to products purchased directly from AMX or an Authorized AMX Dealer.

All products returned to AMX require a Return Material Authorization (RMA) number. The RMA number is obtained from the AMX RMA Department. The RMA number must be clearly marked on the outside of each box. The RMA is valid for a 30-day period. After the 30-day period the RMA will be cancelled. Any shipments received not consistent with the RMA, or after the RMA is cancelled, will be refused. AMX is not responsible for products returned without a valid RMA number.

AMX is not liable for any damages caused by its products or for the failure of its products to perform. This includes any lost profits, lost savings, incidental damages, or consequential damages. AMX is not liable for any claim made by a third party or by an AMX Dealer for a third party.

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Some states do not allow a limitation of how long an implied warranty last. Some states do not allow the limitation or exclusion of incidental or consequential damages for consumer products. In such states, the limitation or exclusion of the Limited Warranty may not apply. This Limited Warranty gives the owner specific legal rights. The owner may also have other rights that vary from state to state. The owner is advised to consult applicable state laws for full determination of rights.

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Table of Contents

MAX Servers - Overview

> **NOTICE**: MAX Products are not designed or intended to, and may not be used to, violate anyone's copyright or other intellectual property rights. Each user of the Products may only use the Products in connection with materials legally owned or licensed by such user and only to the extent such ownership or license rights permit such use.

MAX-MMS (Multimedia) and MAX-HT (Home Theater) Servers utilize robust internal disk drive systems to keep an ever expanding library of DVDs and CDs well organized, simple to access, and easy to use. MAX servers allow you to efficiently manage hundreds of DVDs and CDs.

MAX servers accommodate single and multi-room video distribution, allowing the user to search and select chapters, titles and tracks. Video is stored in native DVD format to fully capture the quality of the original video. Music is stored in native audio CD format. Additionally, MAX servers provide playback of MP3 files.

- MAX servers support up to 25 MAX-AVM audio/video modules, via Ethernet.
- MAX servers support 1 or 2 MAX-AOM audio-only modules (each of which can distribute four zones of audio), via USB.

MMS Multimedia Servers

MMS-01S (FG 2178-10)
approximately 250GB of content storage

MMS-02S (FG 2178-12)
approximately 500GB of content storage

MMS-02SB (FG 2178-11)
approximately 250GB of content storage

MMS-04S (FG 2178-07)
approximately 1TB of content storage

MMS-12S (FG 2178-08)
approximately 3TB of content storage

MMS-900 (FG 2178-06)
more than 7TB of content storage
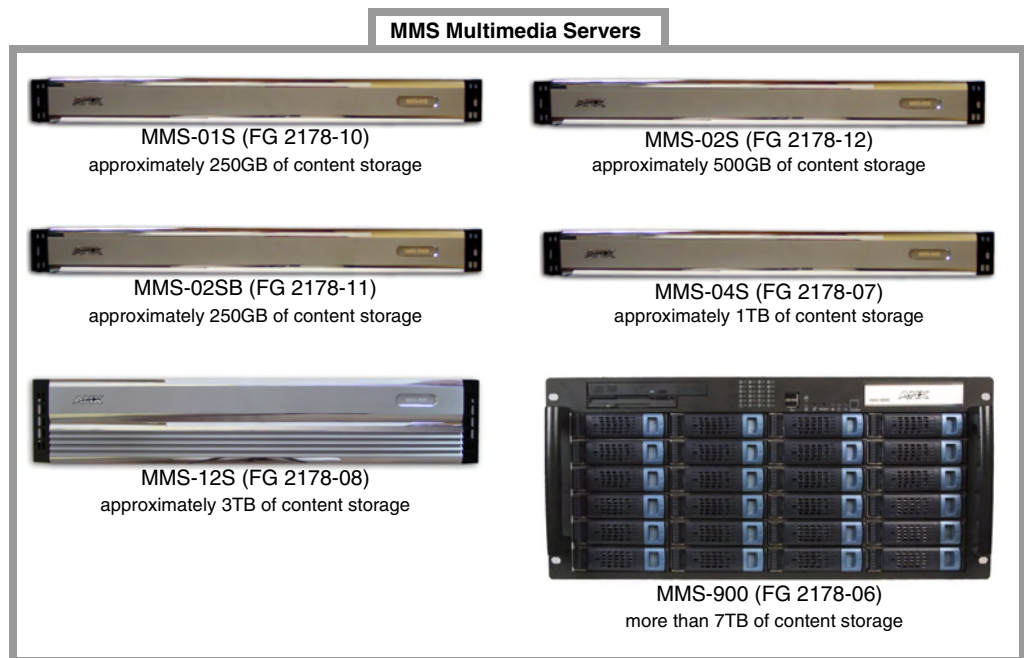
FIG. 1 MAX MMS Multimedia Servers

> *Refer to the MAX Modules Instruction Manual (available online at www.amx.com), as well as the individual Installation Guides for details and installation instructions on MAX Modules.*

HT Home Theater Servers

MAX-HT04 (FG 2178-14)
more than 1TB of content storage

MAX-HT12 (FG 2178-15)
more than 4TB of content storage
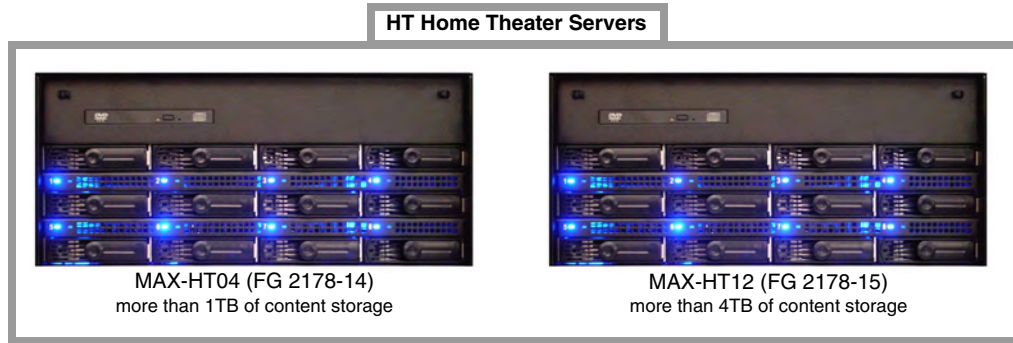
FIG. 2 MAX HT Home Theater Servers

- Connect a PS/2 mouse and keyboard, and a VGA monitor directly to the MAX server to access the on-board interface, called the MAX Admin Menu. You'll use the options in the Admin Menu to configure communication settings and add/remove MAX-AVM and MAX-AOM modules. Refer to the *MAX Servers - Setup and Configuration* section on page 19 for details.
- Depending on the region in which the MAX Server will be installed and operated, you may need to change the server DVD-ROMs' region code setting. Refer to the *DVD Region Code Settings* section on page 45 for details.
- Use the WinMAX software to configure and control MAX servers as well as manage content from any Windows PC. Refer to the WinMAX Software Instruction Manual (available online at www.amx.com) for information and instructions.

Related Documents

The following AMX documents provide additional information on the HT Servers and related devices, and are available online at www.amx.com:

- Use the WinMAX software to add/remove DVD/CD content on the server, and control playback. Refer to the WinMAX Software Instruction Manual for details.
- Refer to the MDL-200 Multi-Disc Loader System Instruction Manual for details on using the MDL200 to bulk-load large numbers of discs to the server.
- Refer to the MAX-AOM, MAX-AVM and MAX-AVP Installation Guides and Instruction Manuals for detailed product information.

MAX HT Servers - Photos and Specifications

MAX-HT04/HT12 Home Theater Servers
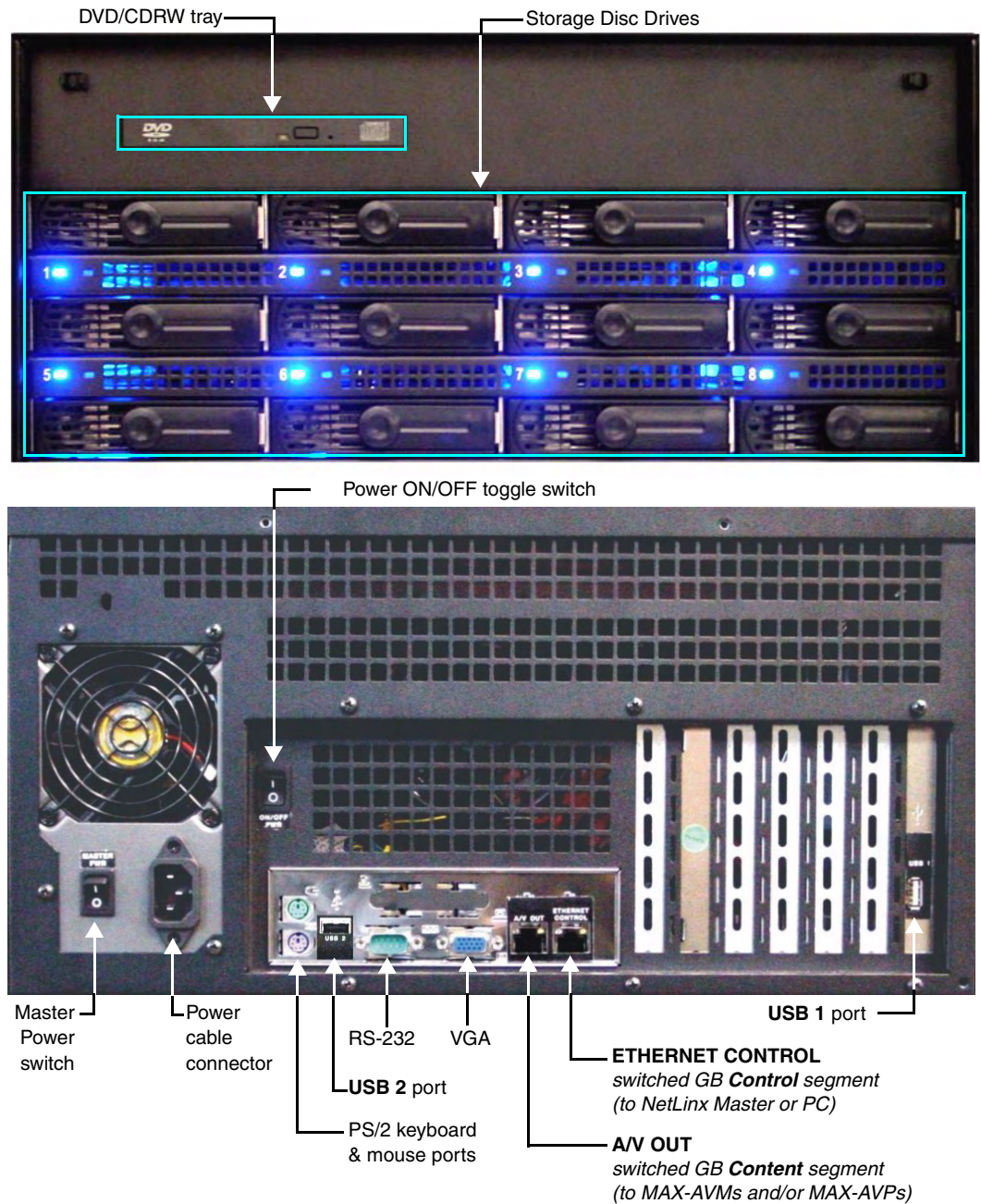
FIG. 3 MAX-HT04/12 Home Theater Servers

IMPORTANT! *MAX-HT Servers require a 24-hour initialization period. This simply entails powering up the server and letting it charge and initiate for 24 hours before use. Failure to allow this initialization to complete may cause performance problems during media playback.*

Product Specifications

MAX-HT04/HT12 Specifications	
Device Models:	• MAX-HT04 **(FG 2178-14)** • MAX-HT12 **(FG 2178-15)**
Storage Capacity:	• MAX-HT04: 1.1 TBs, 275 DVDs (max) / 138 DVDs (min.) • MAX-HT12: 4.0 TBs, 1000 DVDs (max) / 500 DVDs (min.)
Notes: • *The MAX number of DVDs is based on DVDs at 4.0 GB.* • *The MIN number is based on the largest DVD at 8.0 GB.* • *DVD capacity is based on typical commercial DVDs.* • *DVD size is based on total DVD image, not the length of the movie.* *The actual server capacity will vary depending on specific mix of DVDs and CDs in the library.*	
Disc Management	RAID 5 disc drive system
Power:	110-240 VAC +/- 10%, 50/60Hz
AC Current Draw - **MAX-HT04**:	
120 VAC:	• Bootup/Power Cycle Peak - 3.0A @ 120V = 360 watts • Normal Usage Peak - 1.9A @ 120V = 228 watts
240 VAC:	• Bootup/Power Cycle Peak - 1.5A @ 240V = 360 watts • Normal Usage Peak - 0.95A @ 240V = 228 watts
AC Current Draw - **MAX-HT12**:	
120 VAC:	• Bootup/Power Cycle Peak - 6.0A @ 120V = 720 watts • Normal Usage Peak - 3.0A @ 120V = 360 watts
240 VAC:	• Bootup/Power Cycle Peak - 3.0A @ 240V = 720 watts • Normal Usage Peak - 1.5A @ 240V = 360 watts
Front Panel Components: (remove Faceplate to access)	• **MAX-HT04**: 4 hot-swappable 400GB hard drives • **MAX-HT12**: 12 hot-swappable 400GB hard drives • DVD/CDRW drive • Drive Status LEDs • Ventilated front cover
Rear Panel Components:	• Power Cable connector: IEC connector for AC power cable (included) • Master Power Supply switch: Turns the power supply on/off • Power On/Off toggle switch: Turns the MAX-HT on/off • PS/2 Keyboard and Mouse ports (*for diagnostics only*) • USB ports 1 & 2: Type A USB connectors connect to MAX-AOM module(s) for audio distribution • RS-232 port: (*for diagnostics only*) • VGA port: (*for diagnostics only*) • ETHERNET CONTROL port: RJ-45 Gigabit Ethernet port provides 1000/100/10 Mb/s network connectivity between the MAX-HT and the NetLinx Master or PC • A/V OUT port: RJ-45 Gigabit Ethernet port provides 1000/100/10 Mb/s network connectivity between the MAX-HT and MAX-AVP Audio-Video Players and/or MAX-AVM module(s) for A/V distribution
Dimensions (HWD): (without rack ears)	• 8.75" x 16.95" x 18.90" (22.23 cm x 43.50 cm x 48.00 cm) • 5 RU (mounts in a standard 19" equipment rack)
Weight (*servers only*):	• **MAX-HT04**: 60 lbs (27.22 kg) • **MAX-HT12**: 68 lbs (30.84 kg)
Shipping Weight (*including mounting equipment and box*)	• **MAX-HT04**: 83.9 lbs (38.06 kg) • **MAX-HT12**: 91.9 lbs (41.69 kg)
	•

MAX-HT04/HT12 Specifications (Cont.)	
Operating Environment:	• Operating Temperature: 10º to 35º C
	• Operating Relative Humidity: 20% to 80% (non-condensing)
	• Minimum Ventilation Clearance: 3" front and 3" rear
Included Accessories:	• One 6' (1.83m) power cable
	• One DVD, one CD
	• Rack-Mounting Kit/Installation Guide
Other AMX/MAX Equipment:	• MAX-AVP Audio-Video Player (**FG 2178-51**)
	• MAX-AVM Audio-Video Module **(FG 2178-50)**
	• MAX-AOM Audio-Only (USB) Module **(FG 2178-55)**
	• MAX-AOM-EX Expansion Kit (**FG 2178-56**)
	• MAX-MDL200 Multi-Disc Loader **(FG 2179-01)**
Certifications:	UL Listed E252362, FCC, CE
Required Firmware version:	4.30.23 or greater - contact AMX Technical Support for details

MAX MMS Servers - Photos and Specifications

MMS-01S Multimedia Server

Faceplate snaps on/off to allow access to the hard drive and DVD/CDRW drive
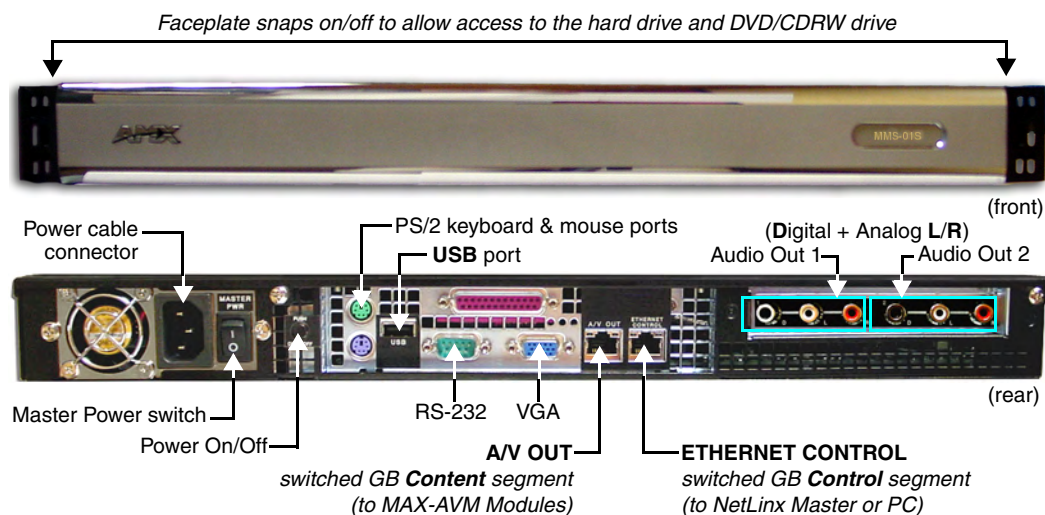
FIG. 4 MMS-01S Multimedia Server

Product Specifications

MMS-01S (FG 2178-10)	
Storage capacity:	• 250 gigabytes of storage space • 25 DVD (625 CD) capacity (approximate values) • Approximately 25 CDs can be stored in place of 1 DVD
Power:	110-240 VAC, 50/60Hz
AC Current Draw (AMP):	• 1.01A - Bootup/Power Cycle Peak • .95A - Normal Usage Peak
Front Panel Components: (remove Faceplate to access)	• 1 cold-swappable 250GB hard drive • Drive Status LEDs • DVD/CDRW drive • Ventilated front cover
Rear Panel Components:	• Power Cable connector: IEC connector for AC power cable (included) • Master Power Supply switch: Turns the power supply on/off • Power On/Off button: Turns the MMS on/off • PS/2 Keyboard and Mouse ports • USB port: Type A USB connector connects to one MAX-AOM module for additional audio distribution • RS-232 port: DB-9 serial port for external control • Parallel port: *not used* • VGA port: DB15HD port provides VGA output • ETHERNET CONTROL port: RJ-45 Gigabit Ethernet port provides 1000/100/10 Mb/s network connectivity between the MMS and the NetLinx Master or PC • A/V OUT port: RJ-45 Gigabit Ethernet port provides 1000/100/10 Mb/s network connectivity between the MMS and MAX-AVM module(s) for A/V distribution

MMS-01S (FG 2178-10) Product Specifications (Cont.)	
Rear Panel Components (Cont.):	• Audio outputs: Two sets of three RCA jacks (D,L,R) provide digital (D) and analog stereo (L, R) output
Audio Output:	• 2 audio output channels, each with RCA SPDIF digital, analog stereo
	• Digital audio output: 6-channel Dolby Digital and DTS
	• Analog audio output: stereo
	• 24-bit D/A conversion, 128X over sampling
	• 48kHz sampling rate
	• Output level -10dBV nominal
	• Signal to Noise Ratio 110db A-weighted
	• Frequency Response: 20Hz to 20kHz
	• Dynamic Range: 110dB
Dimensions (HWD): (without rack ears)	• 1.75"" x 17.3" x 20" (4.45 cm x 43.94 cm x 50.80 cm)
	• 1 RU (mounts in a standard 19" equipment rack)
Weight:	26.40 lbs (11.97 kg)
Operating Environment:	• Operating Temperature: 10º to 35º C
	• Operating Relative Humidity: 20% to 80% (non-condensing)
	• Minimum Ventilation Clearance: 3" front and 3" rear
	• Operating acoustic noise: 62 dBA
Included Accessories:	• One 6' (1.83m) power cable
	• One DVD, one CD
	• Rack-mounting kit
Other AMX/MAX Products:	• MAX-AVM Audio-Video Module **(FG 2178-50)**
	• MAX-AOM Audio-Only (USB) Module **(FG 2178-55)**
	• MAX-AOM-EX Expansion Kit (**FG 2178-56**)
	• MAX-MDL200 Multi-Disc Loader **(FG 2179-01)**
	• MMS-HDD250G Replacement 250MB HDD **(FG 2178-250)**
Certifications:	UL Listed E252362, FCC, CE

MMS-02S Multimedia Server

Faceplate snaps on/off to allow access to the hard drive and DVD/CDRW drive

FIG. 5 MMS-02S Multimedia Server

Product Specifications

MMS-02S (FG 2178-12)	
Storage capacity:	• 500 gigabytes of storage space • 50 DVD (1,250 CD) capacity (approximate values) • Approximately 25 CDs can be stored in place of 1 DVD • Uses a RAID 0 disc drive system
Power:	110-240 VAC, 50/60Hz
AC Current Draw (AMP):	• 1.51A - Bootup/Power Cycle Peak • 1.05A - Normal Usage Peak
Front Panel Components: (remove Faceplate to access)	• 2 cold-swappable 250GB hard drives • Drive Status LEDs • DVD/CDRW drive • Ventilated front cover
Rear Panel Components:	• Power Cable connector: IEC connector for AC power cable (included) • Master Power Supply switch: Turns the power supply on/off • Power On/Off button: Turns the MMS on/off • PS/2 Keyboard and Mouse ports • USB port: Type A USB connector connects to one MAX-AOM module for additional audio distribution • RS-232 port: DB-9 serial port for external control • Parallel port: *not used* • VGA port: DB15HD port provides VGA output • ETHERNET CONTROL port: RJ-45 Gigabit Ethernet port provides 1000/100/10 Mb/s network connectivity between the MMS and the NetLinx Master or PC • A/V OUT port: RJ-45 Gigabit Ethernet port provides 1000/100/10 Mb/s network connectivity between the MMS and MAX-AVM module(s) for A/V distribution • Audio outputs: Two sets of three RCA jacks (D,L,R) provide digital (D) and analog stereo (L, R) output

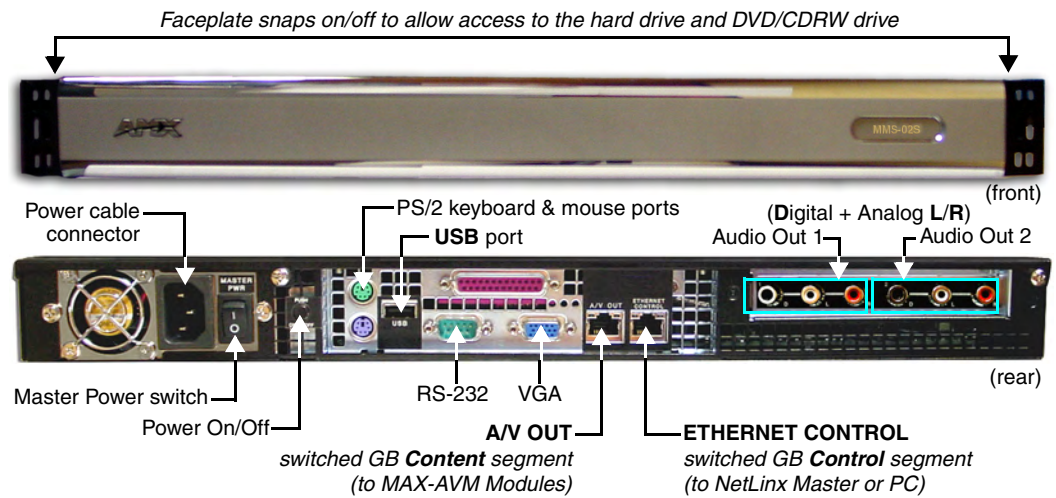| MMS-02S (FG 2178-12) Product Specifications (Cont.)	
Audio Output:	• 2 audio output channels, each with RCA SPDIF digital, analog stereo • Digital audio output: 6-channel Dolby Digital and DTS • Analog audio output: stereo • 24-bit D/A conversion, 128X over sampling • 48kHz sampling rate • Output level -10dBV nominal • Signal to Noise Ratio 110db A-weighted • Frequency Response: 20Hz to 20kHz • Dynamic Range: 110dB
Dimensions (HWD): (without rack ears)	• 1.75"" x 17.3" x 20" (4.45 cm x 43.94 cm x 50.80 cm) • 1 RU (mounts in a standard 19" equipment rack)
Weight:	28 lbs (12.70 kg)
Operating Environment:	• Operating Temperature: 10º to 35º C • Operating Relative Humidity: 20% to 80% (non-condensing) • Minimum Ventilation Clearance: 3" front and 3" rear • Operating acoustic noise: 62 dBA
Included Accessories:	• One 6' (1.83m) power cable • One DVD, one CD • Rack-mounting kit
Other AMX/MAX Products:	• MAX-AVM Audio-Video Module **(FG 2178-50)** • MAX-AOM Audio-Only (USB) Module **(FG 2178-55)** • MAX-AOM-EX Expansion Kit (**FG 2178-56**) • MAX-MDL200 Multi-Disc Loader **(FG 2179-01)** • MMS-HDD250G Replacement 250MB HDD **(FG 2178-250)**
Certifications:	UL Listed E252362, FCC, CE

MMS-02SB Multimedia Server with Backup

Faceplate snaps on/off to allow access to the hard drive and DVD/CDRW drive

(front)

(rear)

Power cable connector

PS/2 keyboard & mouse ports

USB port

(**D**igital + Analog **L/R**)

Audio Out 1 — Audio Out 2

Master Power switch

Power On/Off

RS-232   VGA

A/V OUT
switched GB **Content** *segment*
(to MAX-AVM Modules)

ETHERNET CONTROL
switched GB **Control** *segment*
(to NetLinx Master or PC)

FIG. 6 MMS-02SB Multimedia Server with Backup

Product Specifications

MMS-02SB (FG 2178-11)	
Storage capacity:	• 250 gigabytes of storage space • 25 DVD (625 CD) capacity (approximate values) - plus full content backup • Approximately 25 CDs can be stored in place of 1 DVD • RAID 1 disc mirroring
Power:	110-240 VAC, 50/60Hz
AC Current Draw (AMP):	• 1.49A - Bootup/Power Cycle Peak • 1.05A - Normal Usage Peak
Front Panel Components: (remove Faceplate to access)	• 2 cold-swappable 250GB hard drives • Drive Status LEDs • DVD/CDRW drive • Ventilated front cover
Rear Panel Components:	• Master Power Supply switch: Turns the power supply on/off • Power On/Off button: Turns the MMS on/off • PS/2 Keyboard and Mouse ports • USB port: Type A USB connector connects to one MAX-AOM module for additional audio distribution • RS-232 port: DB-9 serial port for external control • Parallel port: *not used* • Power Cable connector: IEC connector for AC power cable (included) • VGA port: DB15HD port provides VGA output • ETHERNET CONTROL port: RJ-45 Gigabit Ethernet port provides 1000/100/10 Mb/s network connectivity between the MMS and the NetLinx Master or PC • A/V OUT port: RJ-45 Gigabit Ethernet port provides 1000/100/10 Mb/s network connectivity between the MMS and MAX-AVM module(s) for A/V distribution • Audio outputs: Two sets of three RCA jacks (D,L,R) provide digital (D) and analog stereo (L, R) output

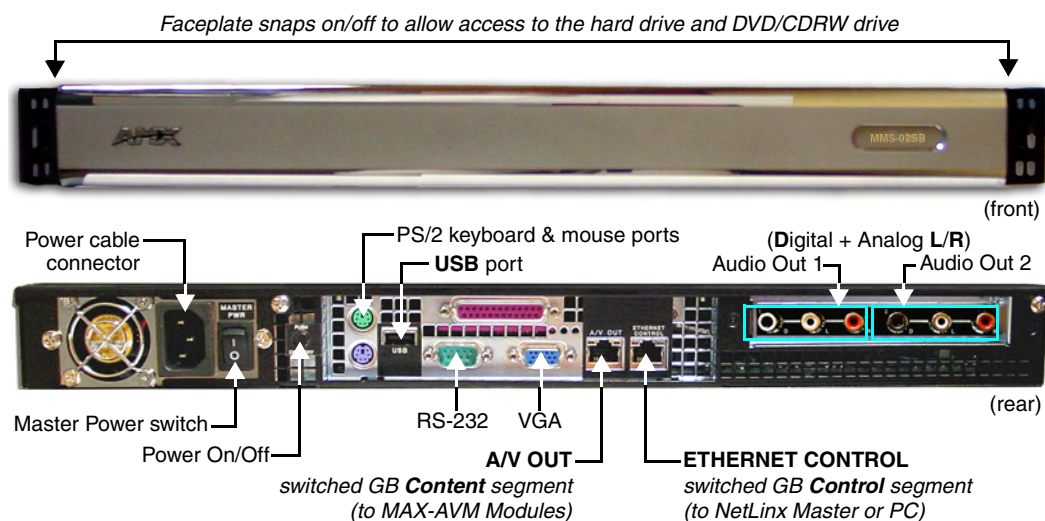| MMS-02SB (FG 2178-11) Product Specifications (Cont.)	
Audio Output:	• 2 audio output channels, each with RCA SPDIF digital, analog stereo • Digital audio output: 6-channel Dolby Digital and DTS • Analog audio output: stereo • 24-bit D/A conversion, 128X over sampling • 48kHz sampling rate • Output level -10dBV nominal • Signal to Noise Ratio 110db A-weighted • Frequency Response: 20Hz to 20kHz • Dynamic Range: 110dB
Dimensions (HWD): (without rack ears)	• 1.75"" x 17.3" x 20" (4.45 cm x 43.94 cm x 50.80 cm) • 1 RU (mounts in a standard 19" equipment rack)
Weight:	28 lbs (12.70 kg)
Operating Environment:	• Operating Temperature: 10º to 35º C • Operating Relative Humidity: 20% to 80% (non-condensing) • Minimum Ventilation Clearance: 3" front and 3" rear • Operating acoustic noise: 62 dBA
Included Accessories:	• One 6' (1.83m) power cable • One DVD, one CD • Rack-mounting kit
Other AMX/MAX Products:	• MAX-AVM Audio-Video Module **(FG 2178-50)** • MAX-AOM Audio-Only (USB) Module **(FG 2178-55)** • MAX-AOM-EX Expansion Kit (**FG 2178-56**) • MAX-MDL200 Multi-Disc Loader **(FG 2179-01)** • MMS-HDD250G Replacement 250MB HDD **(FG 2178-250)**
Certifications:	UL Listed E252362, FCC, CE

MMS-04S Multimedia Server

Faceplate snaps on/off to allow access to the hard drive and DVD/CDRW drive

(front)

Power On/Off pushbutton

Power cable connector

PS/2 keyboard & mouse ports

USB 2 port

USB 1 port

Master Power switch

RS-232   VGA

(rear)

A/V OUT
switched GB **Content** *segment*
(to MAX-AVM Modules)

ETHERNET CONTROL
switched GB **Control** *segment*
(to NetLinx Master or PC)

FIG. 7 MMS-04S Multimedia Server

Product Specifications

MMS-04S (FG 2178-07)	
Storage capacity:	• 1 terabyte of storage space • 100 DVD (2,500 CD) capacity (approximate values) • Approximately 25 CDs can be stored in place of 1 DVD • Uses a RAID 5 disc drive system
Power:	110-240 VAC, 50/60Hz
AC Current Draw (AMP):	• 1.55A - Bootup/Power Cycle Peak • 1.15A - Normal Usage Peak
Front Panel Components: (remove Faceplate to access)	• 4 hot-swappable 250GB hard drives • DVD/CDRW drive • Drive Status LEDs • Ventilated front cover
Rear Panel Components:	• Power Cable connector: IEC connector for AC power cable (included) • Master Power Supply switch: Turns the power supply on/off • Power On/Off button: Turns the MMS on/off • PS/2 Keyboard and Mouse ports • USB ports 1 & 2: Type A USB connectors connect to MAX-AOM module(s) for audio distribution • RS-232 port: DB-9 serial port for external control • Parallel port: *not used* • VGA port: DB15HD port provides VGA output • ETHERNET CONTROL port: RJ-45 Gigabit Ethernet port provides 1000/100/10 Mb/s network connectivity between the MMS and the NetLinx Master or PC • A/V OUT port: RJ-45 Gigabit Ethernet port provides 1000/100/10 Mb/s network connectivity between the MMS and MAX-AVM module(s) for A/V distribution
Dimensions (HWD): (without rack ears)	• 1.75"" x 17.3" x 20" (4.45 cm x 43.94 cm x 50.80 cm) • 1 RU (mounts in a standard 19" equipment rack)
Weight:	42 lbs (19.05 kg)

MMS-04S (FG 2178-07) Product Specifications (Cont.)	
Operating Environment:	• Operating Temperature: 10º to 35º C
	• Operating Relative Humidity: 20% to 80% (non-condensing)
	• Minimum Ventilation Clearance: 3" front and 3" rear
	• Operating acoustic noise: 62 dBA
Included Accessories:	• One 6' (1.83m) power cable
	• One DVD, one CD
	• Rack-mounting kit
Other AMX/MAX Products:	• MAX-AVM Audio-Video Module **(FG 2178-50)**
	• MAX-AOM Audio-Only (USB) Module **(FG 2178-55)**
	• MAX-AOM-EX Expansion Kit (**FG 2178-56**)
	• MAX-MDL200 Multi-Disc Loader **(FG 2179-01)**
	• MMS-HDD250G Replacement 250MB HDD **(FG 2178-250)**
Certifications:	UL Listed E252362, FCC, CE

MMS-12S Multimedia Server

Faceplate snaps on/off to allow access to the hard drives

(front)

2 Power cable connectors

2 Removable power supplies

Power Supply Reset

PS/2 keyboard & mouse ports

USB 2 port

USB 1 port

(rear)

Power On/Off

RS-232   VGA

A/V OUT
*switched GB **Content** segment
(to MAX-AVM Modules)*

ETHERNET CONTROL
*switched GB **Control** segment
(to NetLinx Master or PC)*
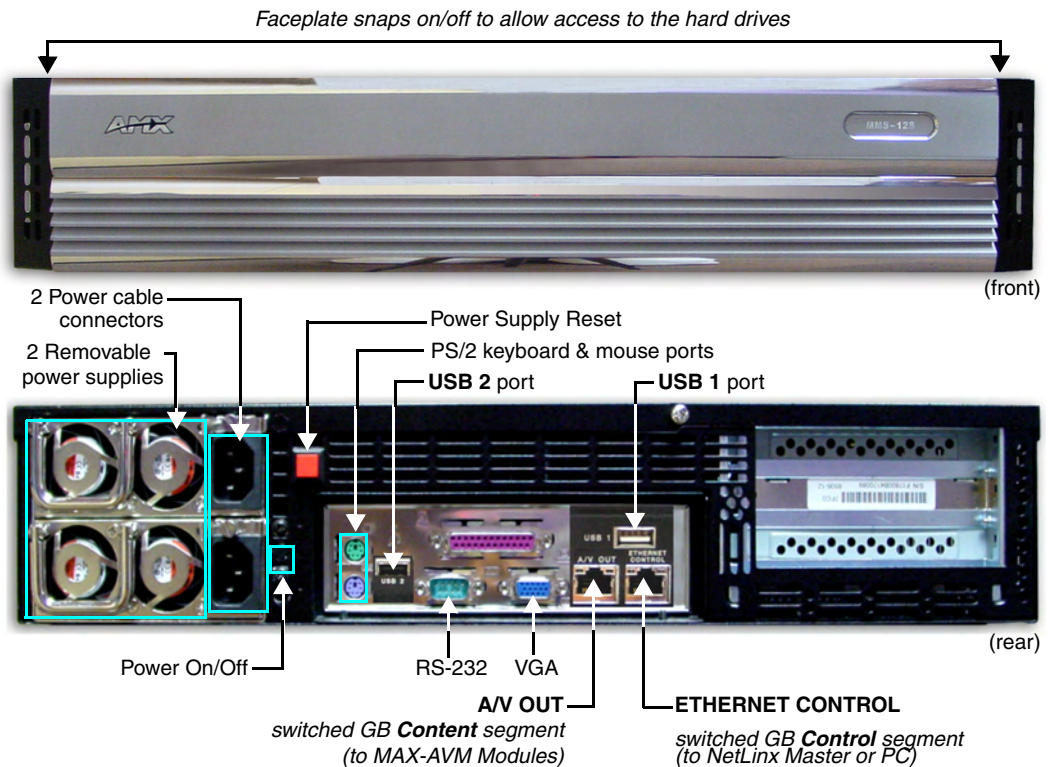
FIG. 8 MMS-12S Multimedia Server

Product Specifications

MMS-12S (FG 2178-08) Product Specifications	
Storage capacity:	• 3 terabytes of storage space • 300 DVD (7,500 CD) capacity (approximate values) • Approximately 25 CDs can be stored in place of 1 DVD • Uses a RAID 5 disc drive system
Power:	110-240 VAC, 50/60Hz
AC Current Draw (AMP):	For each of the 2 power supplies: • 3.40A - Bootup/Power Cycle Peak • 2.06A - Normal Usage Peak
Front Panel Components: (remove Faceplate to access)	• 12 hot-swappable 250GB hard drives • Drive Status LEDs • Ventilated front cover
Rear Panel Components:	• Two Removable Power Supplies • Two Power Cable connectors: IEC connectors for AC power cables (included) • Power On/Off button: Turns the MMS on/off • Power Supply Reset button • PS/2 Keyboard and Mouse ports • USB ports 1 & 2: Type A USB connectors connect to MAX-AOM module(s) for audio distribution • RS-232 port: DB-9 serial port for external control • Parallel port: *not used* • VGA port: DB15HD port provides VGA output

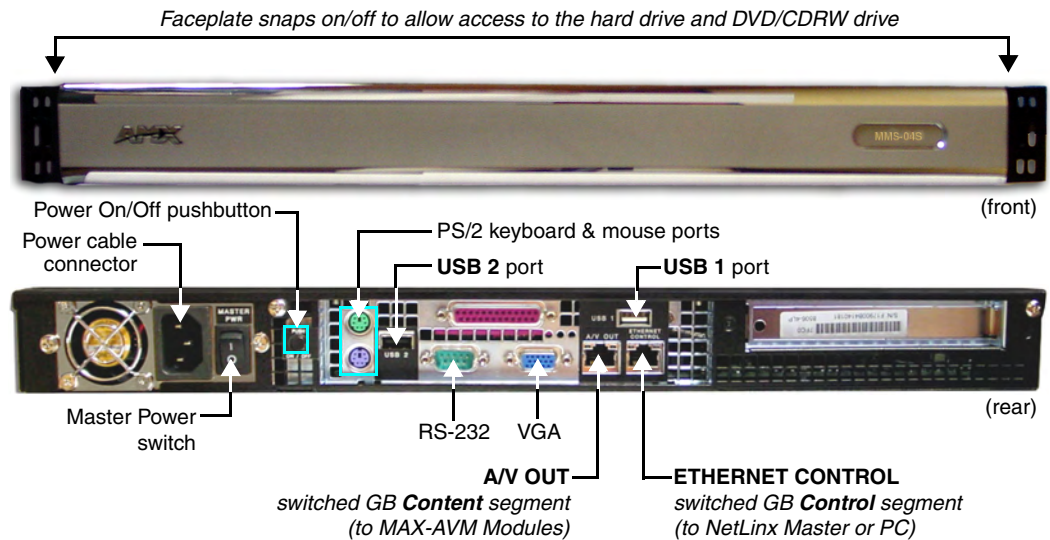| MMS-12S (FG 2178-08) Product Specifications (Cont.)	
Rear Panel Components (Cont.):	• ETHERNET CONTROL port: RJ-45 Gigabit Ethernet port provides 1000/100/10 Mb/s network connectivity between the MMS and the NetLinx Master or PC • A/V OUT port: RJ-45 Gigabit Ethernet port provides 1000/100/10 Mb/s network connectivity between the MMS and MAX-AVM module(s) for A/V distribution
Dimensions (HWD): (without rack ears)	• 3.50"" x 17.3" x 20" (8.89 cm x 43.94 cm x 50.80 cm) • 2 RU (mounts in a standard 19" equipment rack)
Weight:	64.10 lbs (29.7 kg)
Operating Environment:	• Operating Temperature: 10º to 35º C • Operating Relative Humidity: 20% to 80% (non-condensing) • Minimum Ventilation Clearance: 3" front and 3" rear • Operating acoustic noise: 62 dBA
Included Accessories:	• Two 6' (1.83m) power cables • One DVD, one CD • Rack-mounting kit
Other AMX/MAX Products:	• MAX-AVM Audio-Video Module **(FG 2178-50)** • MAX-AOM Audio-Only (USB) Module **(FG 2178-55)** • MAX-AOM-EX Expansion Kit (**FG 2178-56**) • MAX-MDL200 Multi-Disc Loader **(FG 2179-01)** • MMS-HDD250G Replacement 250MB HDD **(FG 2178-250)**
Certifications:	UL Listed E252362, FCC, CE

MMS-900 Multimedia Server

Storage Disc Drives

DVD/CDRW tray

Hard drive
activity LEDs

Reset button

Power LED (green)

Bootup Disc LED (yellow)

Fan LED (red)

Power button

(front)

ETHERNET CONTROL
switched GB **Control** *segment*
(to NetLinx Master or PC)

PS/2 keyboard &
mouse ports

USB 1 port

USB 2 port

A/V OUT
switched GB **Content** *segment*
(to MAX-AVM Modules)

(rear)

RS-232

VGA

4 Power cable connectors
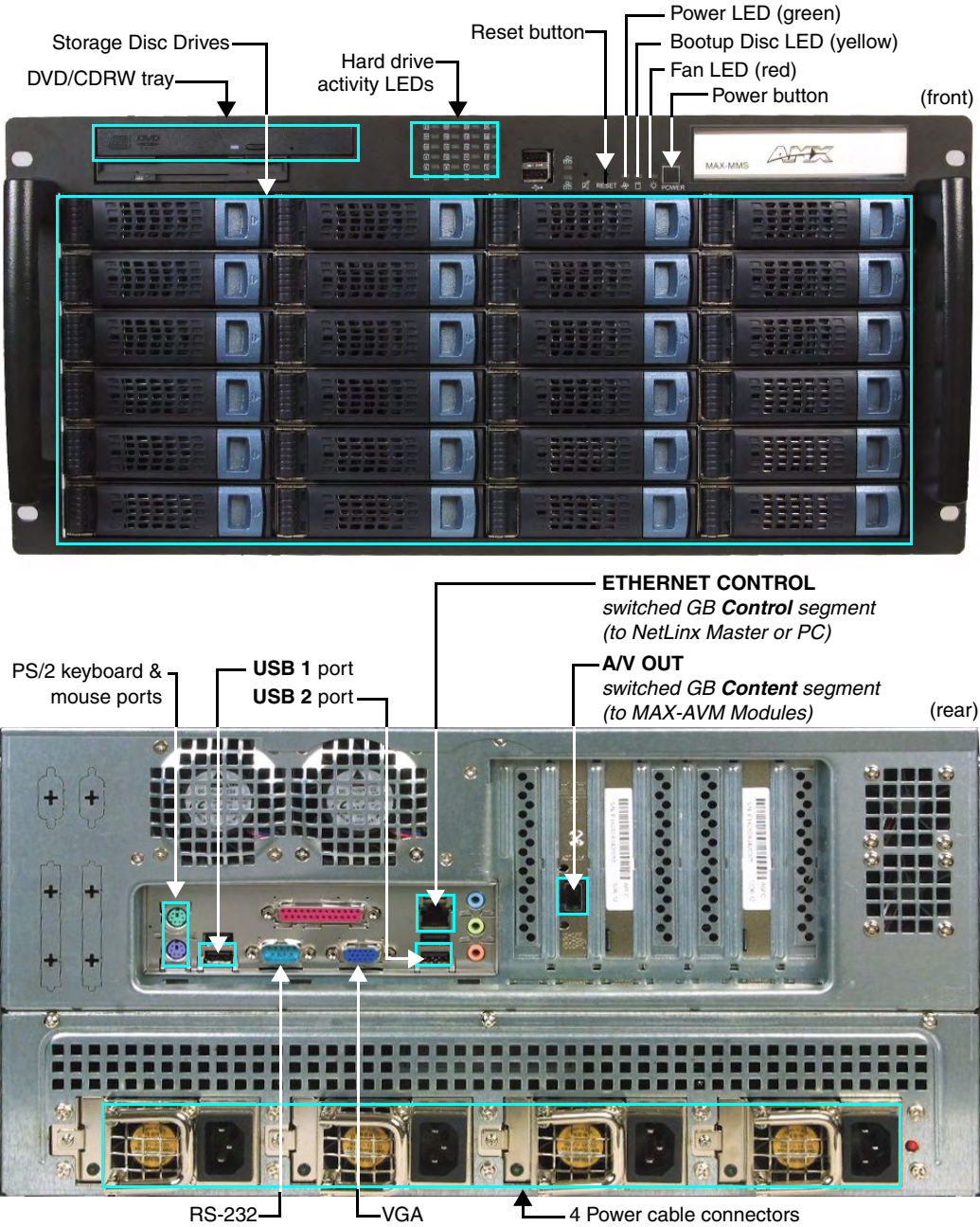
FIG. 9 MMS-900 Multimedia Server

Product Specifications

MMS-900 (FG 2178-06)	
Storage capacity:	• Over 7 terabytes of storage space • 900 DVD (22,500 CD) capacity (approximate values) • Approximately 25 CDs can be stored in place of 1 DVD • Uses a RAID 5 disc drive system
Power:	• 115 VAC/950W • 3+1 redundant power supply • 350W per module
AC Current Draw (AMP):	For each of the 3 power supplies: • 8.84A - Bootup/Power Cycle Peak • 3.23A - Normal Usage Peak
Front Panel Components: (remove Faceplate to access)	• DVD/CDRW tray • 3.5" Floppy disk drive • Hard Drive LEDs: Bank of LEDs indicate activity on the storage drives • USB ports: *not used* • Fan LED (red): lights to indicate failure of cooling fan(s) • Bootup Disc LED (yellow): lights to indicate activity on the bootup drive • Power LED (green): lights to indicate that the unit is on • Reset button • Power button • Removable Hard Drives: 24 hot-swappable 300GB disc drives for storage
Rear Panel Components:	• PS/2 Keyboard and Mouse ports • USB ports 1 & 2: Type A USB connectors connect to MAX-AOM module(s) for audio distribution • RS-232 port: DB-9 serial port for external control • VGA port: DB15HD port provides VGA output • Parallel port: *not used* • ETHERNET CONTROL port: RJ-45 Gigabit Ethernet port provides 1000/100/10 Mb/s network connectivity between the MMS and the NetLinx Master or PC • A/V OUT port: RJ-45 Gigabit Ethernet port provides 1000/100/10 Mb/s network connectivity between the MMS and MAX-AVM module(s) for A/V distribution • Power connectors: 4 IEC connectors for AC power cables (included)
Dimensions (HWD):	• 8 11/16" x 18 7/8" x 27 5/8" (22 cm x 47.94 cm x 70.16 cm) • 5 RUs (mounts in a standard 19" equipment rack)
Weight:	120 lbs (54.43 kg)
Operating Environment:	• Operating Temperature: 10° to 35° C • Operating Relative Humidity: 20% to 80% (non-condensing) • Minimum Ventilation Clearance: 3" front and 3" rear
Included Accessories:	• Four 6' (1.83m) power cables • One DVD, one CD • Rack-mounting kit
Other AMX/MAX Products:	• MAX-AVM Audio-Video Module **(FG 2178-50)** • MAX-AOM Audio-Only (USB) Module **(FG 2178-55)** • MAX-AOM-EX Expansion Kit (**FG 2178-56**) • MAX-MDL200 Multi-Disc Loader **(FG 2179-01)** • MMS-HDD250G Replacement 250MB HDD **(FG 2178-250)**

MAX Servers - Setup and Configuration

Overview

The following sections describe the basic process of setting up a MAX server and making the configurations required to get the server up and running with one or more MAX-AVP Audio/Video Players and/or MAX-AVM Audio/Video Modules and MAX-AOM Audio-Only (USB) modules.

- **MAX-MMS Servers** support up to 25 MAX-AVM modules and up to 2 MAX-AOM (USB) modules.
- **MAX-HT Servers** support the AVM and AOM modules as well as MAX-AVP Audio/Video Players. Since the HT Servers treat AVPs exactly the same as AVMs, each HT server supports up to a total of 25 AVPs/AVMs.

> **NOTE** *Use the WinMAX software to add/remove content on the MAX server, as well as control playback and configure the server. Additional documentation, including the WinMAX Software Instruction Manual and the MAX by AMX Reference Guide are available online at www.amx.com.*

These steps apply to all MAX servers, unless otherwise noted.

> **NOTE** *Refer to the Product Specifications section for each server to establish the location and orientation of the connectors mentioned in these steps.*

Networking Specifications for MAX Servers

It is required that the control segment of the network (using the ETHERNET CONTROL connector) is kept separated from the (switched) content delivery segment (using the A/V OUT connector), as indicated in FIG. 10.
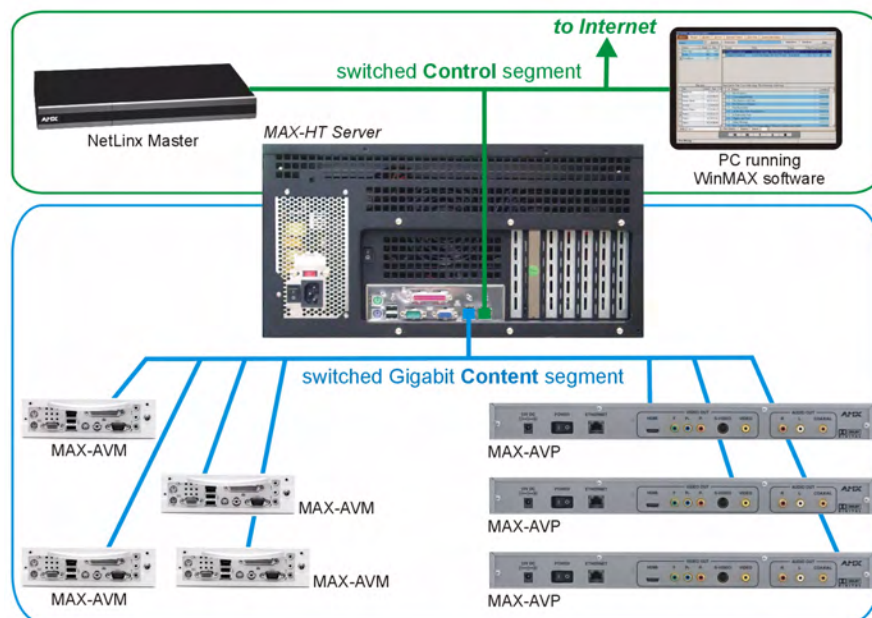
FIG. 10 Network Segment Layout

Online Database

MAX systems (firmware version 4.34 or higher) rely on an online media database for disc recognition. The online database provides all media information (such as disc title, track/chapter information, artist information, etc.). In order to identify discs (CDs and/or DVDs) as they are added to the MAX Server, the MAX Server must have permanent access to the internet.

Previous versions of the MAX Servers utilize a database that resides on the server, and therefore do not require a permanent connection to the internet. The shift from an onboard media information database (updated periodically) to a dynamic online database will provide more accurate and consistent results when identifying new media as they are added to the MAX Server.

Without access to the internet, all media information must be entered manually.

Mandatory 24-Hour Initialization Period (HT Servers only)

IMPORTANT! MAX-HT Servers require a 24-hour initialization period (to charge and initialize the RAID batteries). This simply entails powering up the server and letting it charge and initiate for 24 hours before use.

Failure to allow this initialization to complete may cause performance problems during media playback.

If Power Is Removed From the HT Server

If for reason power is removed from the HT Server for any length of time more than one hour, the RAID batteries will begin to discharge. Partially discharged batteries may cause performance problems during media playback.

In the event that the HT Server has sat without power for more than an hour, you should allow the server to charge for up to 18 hours to ensure that the batteries are fully charged, before use.

For best results, always use a UPS with MAX Servers and avoid removing all power from the unit.

Step 1: Connect a Mouse, Keyboard and VGA Monitor
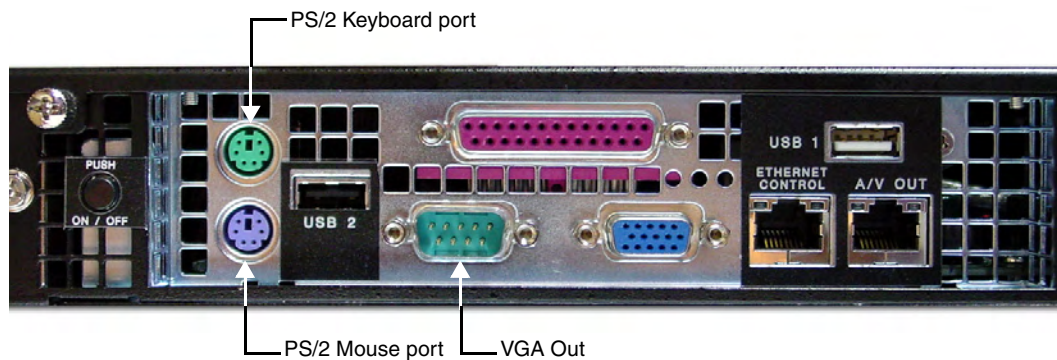
Note: minor layout variations exist between the MMS and HT servers - for example, there is no parallel printer port on the HTs, and the USB 1 port is located outside of this panel.

FIG. 11 MAX Servers - rear panel connectors

Static electricity can damage electronic circuitry. Before touching the MAX server, discharge any accumulated static electricity from your body by touching a grounded metal object.

Connect a PS/2 mouse and keyboard, and a VGA monitor directly to the MAX server to access the on-board interface, called the **MAX Admin Menu** (FIG. 12). You'll use the options in the Admin Menu to configure communication settings and add/remove MAX-AVP Audio/Video Players as well as MAX-AVM and MAX-AOM modules.

Alternatively, you can access the MAX Admin Menu via Telnet, using the Server Configuration feature in the WInMAX software. This requires that the MAX server is configured with an IP address and Subnet Mask settings which are appropriate for your network configuration. Refer to "Step 6: Install and Configure WinMAX Software" for details.

Step 2: Connect the Power Cable(s) and Apply Power

Consider using a UPS with the MAX server, modules and ethernet switch (if applicable).

MMS-01S, -02S, -02SB and MAX-HT Servers:

1. Connect the power supply, using the supplied power cord.
2. Flip the Master Power Supply switch to On.
3. Push the Power On/Off pushbutton to apply power.
4. Allow up to one minute for the server to boot-up.

MMS-04S and -12S Servers:

1. Connect both of the power supplies, using the supplied power cords.
2. Push the Power On/Off pushbutton to apply power.
3. Allow up to one minute for the server to boot-up.

MMS-900 Servers:

1. Connect all of the (4) power supplies, using the supplied power cables.
2. Turn on the Power switch (on the front panel) to apply power.
3. Allow up to one minute for the server to boot-up.

MAX-HT Servers:

1. Connect the power supply, using the supplied power cord.
2. Flip the Master Power Supply switch to On.
3. Push the Power On/Off pushbutton to apply power.
4. Allow up to one minute for the server to boot-up.

Step 3: Access the MAX Admin Menu

Once the boot-up process is complete, the MAX Admin Menu (FIG. 12) is displayed:
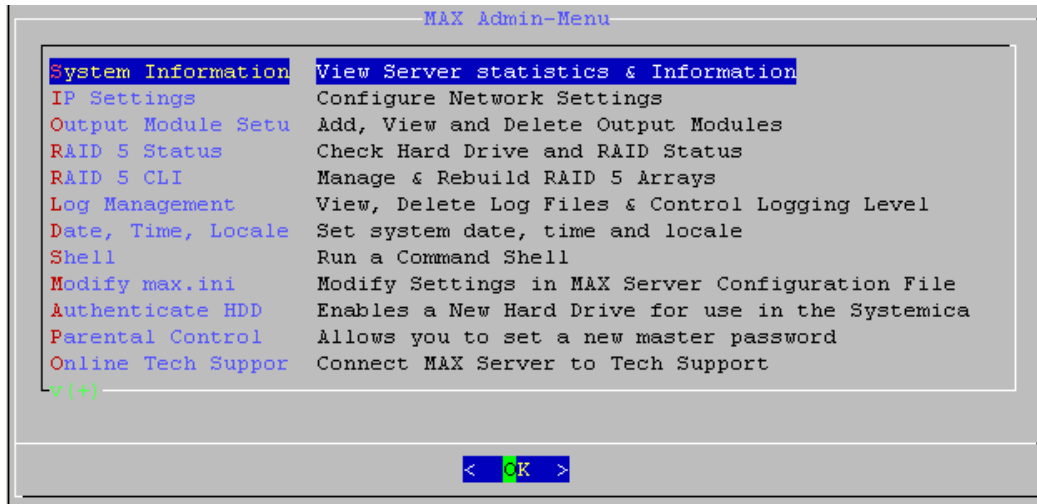
FIG. 12 MAX Admin Menu

The MAX Admin Menu allows access to various administrative functions for the MAX server.

Working With the MAX Admin Menu

- Use the arrow keys on the keyboard to highlight the desired option, and press Enter to make a selection. Do not use the arrow keys on your keyboard's numeric keypad.
- Beyond this menu, press the TAB button to navigate through the elements on the pages until an asterisk appears next to the desired selection.
- Press the spacebar to make a selection (press again to de-select).

For detailed descriptions of all options in the MAX Admin Menu, refer to the MAX Admin Menu section on page 27.

Step 4: Add MAX-AVPs and AVM/AOM Modules to the HT Server

Before you can use MAX-AVP Audio-Video Players MAX-AVM or MAX-AOM modules, they must each first be added to the server, via the *Output Module Setup* options in the MAX Admin Menu. You should add the modules/players to the server before making any physical connections.

Adding MAX-AVP Players and/or MAX-AVM Modules

Complete these steps for each MAX-AVM Audio-Video module and/or MAX-AVP Audio-Video Player that you want to add to the MAX-HT:

HT Servers treat MAX-AVPs exactly the same as MAX-AVMs, and the process of adding them is identical.

1. In the MAX Admin Menu, select: **Output Module Setup > Add Output Module > AVM**.
2. In the *Enter Output Number* field, specify the output on the server that you want to assign to this AVP or AVM (range = 1 - 33). Each AVP/AVM requires one output. Select **OK** to proceed.

Note: The server will not allow you to assign a module to an output/zone that is already in use. Select **Output Module Setup > View** to review the current output/zone assignments.

3. In the *Enter Serial Number* field, enter the *Setup Serial (Key) Number*. This number is printed on a decal located on the bottom of each AVM/AVP enclosure. The system will notify you that the AVP (or AVM) has been added to the system.

MAX-AVMs use a Setup "Serial" Number; MAX-AVPs use a Setup "Key" Number.

4. Select **OK** to return to the Output Module Setup menu, select **OK** again to return to the main menu.
5. Select **Restart MAX daemon**.

Adding MAX-AOM Audio-Only Modules

Complete these steps for each MAX-AOM module that you want to add to the HT:

1. In the MAX Admin Menu, select **Output Module Setup > Add Output Module > AOM**.
2. In the *Enter Output Number* field, specify the first of up to 4 outputs on the server that you want to assign to this AOM (range = 1 - 33).

   Each AOM requires up to 4 server outputs to accommodate the 4 audio output/zones provided by each AOM. Since the MAX-HT12 supports two AOMs (one on each USB port), you can assign up to 8 server outputs. Select **OK**.

3. In the *Enter USB Port Number* field, enter the number of the USB port (**1** or **2**) on the server that this MAX-AOM will be physically connected to. Select **OK**.
4. In the *Enter AOM Output Number* field, specify which audio output/zone on the MAX-AOM (1-4) you are adding to the specified server output. Select **OK**.
5. A message is displayed to notify you that the AOM module has been added to the system. Select **OK** to return to the Output Module Setup menu.

   Repeat these steps to assign each of the AOM's four audio output/zones to a USB port and Output number on the server.

   Notes:
   - Always assign 4 consecutive server outputs to each MAX-AOM, even if you don't plan to use all of the AOM's outputs right away.
   - Assign the 4 server outputs (per AOM) starting either with output #1 (if there are no AVPs/AVMs on this server), or immediately after the last output assigned to an AVP or AVM.
   - To avoid potential confusion later, do not mix AOM outputs and AVP/AVM outputs on the server.

6. Select **Restart MAX daemon**.

Additional Information on USB Ports: MMS-01S, -02S and 02SB Servers

The 2 built-in audio outputs on the MMS-01S, -02S and -02SB servers utilize the internal **USB 1** port on the server. To add an external AOM module to the MMS-01S server, it is important to understand that:

- The two built-in audio outputs occupy audio outputs 1 and 2 on USB 1, leaving outputs 3 and 4 on USB port 1 open.
- The USB port on the rear panel of the server which is used to connect an additional external MAX-AOM module is **USB 2**.
- If you connect an external AOM module to USB 2, the four audio outputs on that AOM will use ports **3** and **4** on **USB 1** (the ports that are unused by the two built-in audio outputs), as well as ports **1** and **2** on **USB 2** (as indicated in the table below):

MMS Output/Zone (1-33)	USB Port Connection (1 or 2)	Audio Output (1-4)
1	1	1'
2	1	2
3	1	3
4	1	4
5	2	1
6	2	2
7...(to 33)	AVM 3...	

Additional Information on USB Ports: MMS-04S, -12S, -900 and MAX-HT Servers

If you are using both USB connectors on the MAX server, be sure to note which audio zones are associated with the AOM connected to each USB port:

- The **USB 1** port is for audio zones 1 through 4.
- The **USB 2** port is for audio zones 5 through 8.

In this scenario, if the AOM connected to USB port 1 on the server (providing AOM outputs 1-4) is unplugged or experiences any other failure, then USB port 2 takes over and behaves like port 1.

As a result, the AOM connected to USB port 2 will switch from providing AOM zones 5-8 to providing audio zones 1-4, the next time the server is rebooted.

Step 5: Connect the Modules To the MAX Server

Once the AVP players and AVM/AOM modules have been added to the server via the MAX Admin Menu, you can physically connect them to the server:

Connecting MAX-AVPs and/or MAX-AVMs

Multiple AVMs/AVPs require a GB Ethernet switch (not included).

1. Connect the audio outputs, using either one of two options:
   a. Use a mini-stereo to RCA adapter for analog audio output
   b. Use a coaxial cable for digital audio output
2. Use a S-Video cable to connect the video output on the AVM or AVP to a display device (MAX-AVMs also support VGA connections).
3. Use ethernet cables to connect the ethernet port on the AVM or AVP to a GB ethernet switch (not included), and the GB ethernet switch to the A/V OUT connector on the server.
4. Connect the included power supply.
5. Push the power button on the front panel of the AVM, and allow up to one minute for the module to boot up. On the AVPs, the power switch is on the rear panel.

*Power up the MAX-HT **before** applying power to the AVP(s) and/or AVM(s).*

Connecting MAX-AOM Modules

NOTE

Do not use a USB hub with MAX-HT servers or AOM modules.

1. Connect the MAX-AOM(s) to an audio system (amplifier, switcher, etc.), using one of two options:
   a. Use RCA cables for analog stereo output (L and R)
   b. Use a coaxial cable for digital audio output (D)
2. Connect the included power supply to apply power to the AOM.
3. Use the supplied USB cable to connect the AOM module to a USB port on the server.

NOTE

*When connecting USB cables to the HT server, **always plug into the USB 1 port first**. The USB 1 port is located on the right side of the rear panel (see FIG. 3).*

NOTE

*Power up the AOM(s) **before** connecting them to the server.*

Step 6: Install and Configure WinMAX Software

Once the MAX-AVP and AVM/AOM modules have been added and connected to the MAX server, you can use the WinMAX software application to initiate and control playback of movies or music.

If it is not already installed, load the WinMAX application on your PC. WinMAX can be downloaded from www.amx.com as a self-extracting executable.

If you intend to connect to the MAX via a LAN connection, verify that the PC is communicating properly with the network, and that the MAX server is powered and booted up.

NOTE

*For WinMAX to be viewed properly, set your PCs resolution to **1024 x 768**.*

1. Use an ethernet cable to connect the ETHERNET CONTROL port on the MAX server to the LAN that the PC running WinMAX is on.
2. Launch the WinMAX software on your PC and open the *System Information* tab, where you can specify the network address of the MAX server.
3. Change the *Server's IP Address or URL* field to match that of the MAX server you are connecting to. Click on the disk icon next to the text-entry field to save this configuration.

   If you are connecting to the MAX server via a direct connection with a PC (using a crossover ethernet cable), be sure that the IP Address of the Network card in your PC is in the same range as the server, but *not the same as* the server. For example a network card setting of 192.168.1.31 will work with an IP address of 192.168.1.30.
4. The blank fields should fill in momentarily, indicating that the MAX has been recognized.

If You Don't Connect

- Check ethernet cables and verify that all connections are intact.
- If you are connecting to the server via a PC network, be sure that the *IP address* and *Subnet Mask* settings are appropriate for your network configuration. Consult your network administrator for help with this.

You can also use WinMAX to establish a Telnet connection with the MAX to access the MAX Admin Menu: in the WinMAX System Information tab, click on Server Configuration. You will be prompted for a User Name and Password. These are case sensitive, and by default:

- User Name = **root**
- Password = **mozart**

If you have connected directly to the MAX (as described in Step 1), you will not be prompted for a User Name or Password.

Loading Media Content on the MAX Server

There are two ways to load media content (DVDs and CDs) onto MAX Servers:

- Use the WinMAX software application to add/remove content on the MAX server. Refer to the *WinMAX Instruction Manual* for details.
- Use the MDL200 MultiDisc Loader System to bulk-load up to 200 discs at a time to the MAX server. Refer to the *MDL200 MultiDisc Loader System Instruction Manual* for details.

MAX systems (firmware version x.xx or higher) rely on an online media database for disc recognition. In order to identify discs (CDs and/or DVDs) as they are added to the MAX Server, the MAX Server must have permanent access to the internet. See the Online Database section on page 20.
Without access to the internet, all media information must be entered manually.

DVD and CD Playback

Once you have established communication with the MAX server via WinMAX, you can use WinMAX to initiate and control playback of movies or music.

Playing a DVD

In WinMAX, open the *Movies* tab. Then, select a DVD title (MAX servers ship with one DVD loaded and ready for playback), and click the **Play** button.

Playing a CD

Open the *Music* tab. Then, select a CD title (MAX servers ship with one CD loaded and ready for playback), and click the **Play** button.

Periodic Updates

The MAX server can receive periodic updates for its system software and internal information database. In order to receive updates, the PC running WinMAX and the server must be on the same network, and the server must be able to access the internet.

Use the options on the IP settings page of the MAX Admin Menu to configure the IP settings of the server for compatibility with your network. Refer to the *IP Settings* section on page 30 for details.

Shutting Down the MAX Server

The correct way to shut down the MAX server is via the **Shutdown** command in the *MAX Admin Menu*. This allows the operating system to shut down cleanly and completely before power is removed from the system.

Always shut down the server this way to avoid the reinitialization process that results from an improper shut down. The reinitialization process can be time-consuming, and cannot be cancelled.

Refer to the *Shutdown* section on page 44 for details.

MAX Admin Menu

Overview

MAX servers utilize a built-in interface called the *MAX Admin Menu* that allows access to various administrative functions for the MAX server. To access the MAX Admin Menu, you must establish a telnet session with the server.

There are two ways to access the MAX Admin Menu - either via the *Server Configuration* option in WinMAX, or by connecting directly to the MAX server.

- If you use the Server Configuration option in WinMAX, you will be prompted for a *User Name* and *Password*. These are case sensitive, and by default:

  User Name = *root*

  Password = *mozart*

- If you have connected directly to the MAX server, you will not be prompted for a User Name or Password.

Accessing the Admin Menu via WinMAX

If there is already a PC running the WinMAX software application connected to the same LAN as the MAX server, you can use WinMAX to establish a telnet connection to the server and access the MAX Admin Menu (FIG. 13):

WinMAX - System Information tab

MAX Server Configuration (telnet) window with MAX Admin Menu
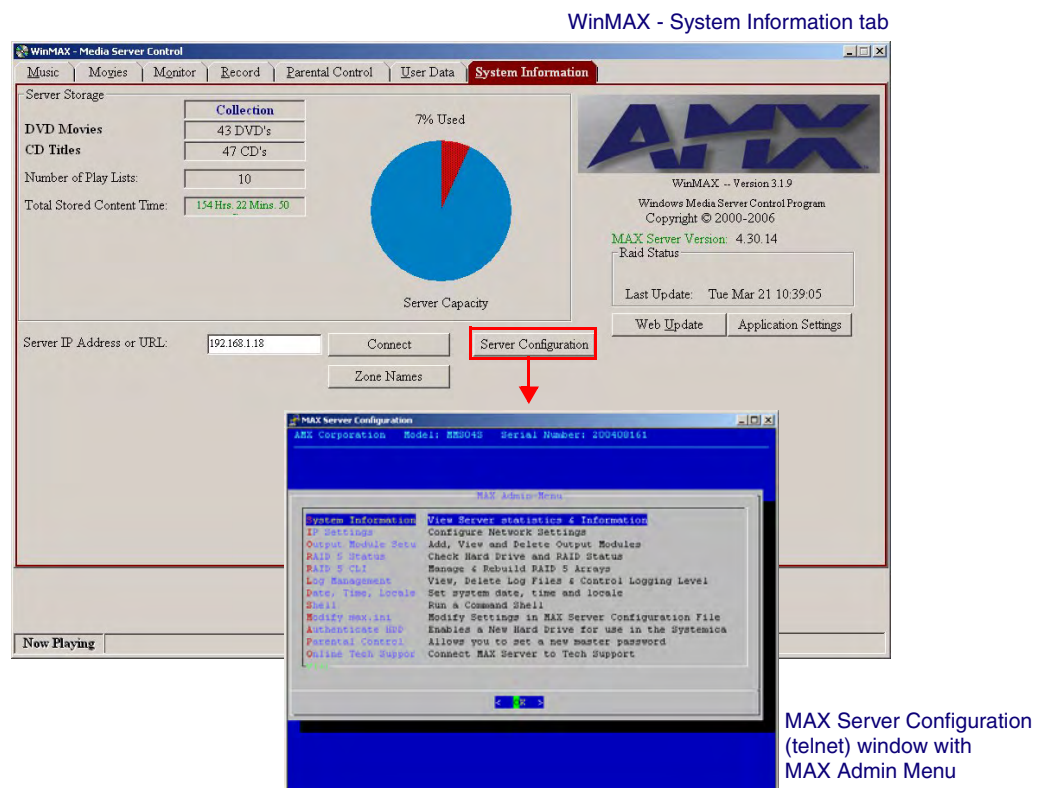
FIG. 13 Accessing the MAX Admin Menu via WinMAX

1. Launch WinMAX and open the *System Information* tab.
2. Verify that a connection exists with the target MAX server.

3. Click the **Server Configuration** button to open the MAX Server Configuration window and establish a telnet session with the server.

4. You will be prompted to enter a *login ID* and (Master) *password*. Once these have been entered correctly, the MAX Admin Menu is displayed in this window.

Accessing the Admin Menu via Direct Connection to the MAX Server

Alternatively, you can connect a mouse, keyboard and VGA monitor directly to the MAX server, via the connectors on the rear panel (FIG. 14).
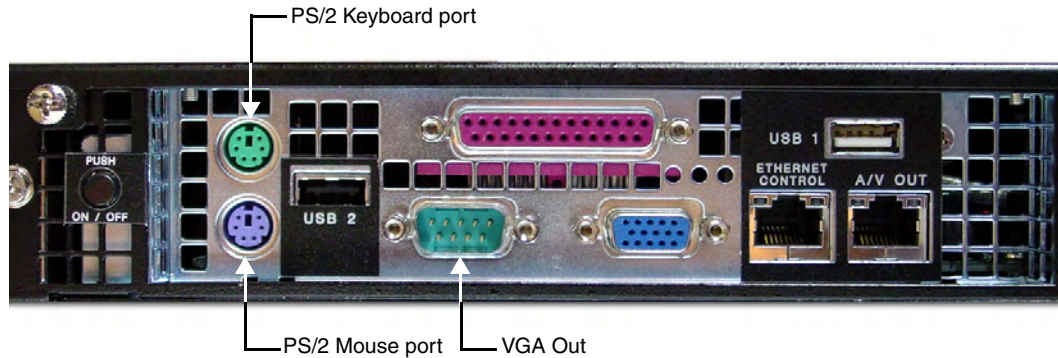
Note: minor layout variations exist between the MMS and HT servers - for example, there is no parallel printer port on the HTs, and the USB 1 port is located outside of this panel.

FIG. 14 MAX Servers - rear panel connectors

Static electricity can damage electronic circuitry. Before touching the MMS, discharge any accumulated static electricity from your body by touching a grounded metal object.

When the server is powered up, you will be prompted to enter a *login ID* and (Master) *password*. Once these have been entered correctly, the MAX Admin Menu is displayed.

MAX Admin Menu Options - Overview

The options in the MAX Admin Menu include:

• System Information:	Displays system hardware and status information (read-only).
• IP Settings:	These options allow you to view and configure the IP settings of the server for compatibility with your network.
• Output Module Setup:	This set of options allows you to add, view and delete external output modules (MAX-AVM audio-video modules and/or MAX-AOM audio-only modules), as well as MAX-AVP Audio-Video Players.
• RAID 5 Status:	Displays status information for the servers RAID 5 array, including individual status for each of the disc drives (read-only).
• RAID 5 CLI:	The options on this page are only for use by AMX Technical Support.
• Add RAID Disks:	The options on this page allow you to migrate unassigned ports to a controller unit.
• Log Management:	The options on this page allow you to view and delete log files, and control the logging level for the server.
• Date, Time Locale:	This set of options allows you to specify/adjust the system's date, time and location settings.
• Shell:	This option opens an MS-DOS window for sending specific commands directly to the server.
• Modify max.ini	The options on this page are only for use by AMX Technical Support.

- Authenticate HDD: The options on this page allow you to add, remove and view hard disc drives (HDDs) in the MAX server.

- Parental Control: This page allows you to enable parental control functionality.

- Online Tech Support: This option allows you to establish a connection between the MAX server and AMX Technical Support, for remote troubleshooting and support operations.

- Disconnect Support: Terminates the connection between the MAX server and AMX Technical Support.

- Cover Art: This option retrieves updated cover art for discs in the MAX server's media library.

- Change Region: The options on this page allow you to change the region code setting for the MAX Server's DVD-ROM.

- Update Firmware: The options on this page allow you to schedule when the server should automatically check for firmware updates (day of week and time), and to manually update the system immediately (if updated firmware is detected).

- Restart MAX Daemon: This option restarts the MAX daemon. Restart the daemon to activate any configuration changes made via the options in the MAX Admin menu.

- Shutdown: This set of options allows you to either Reboot or Shutdown the MAX server.

- Exit: Exits the MAX Admin Menu and terminates the Telnet session.

System Information
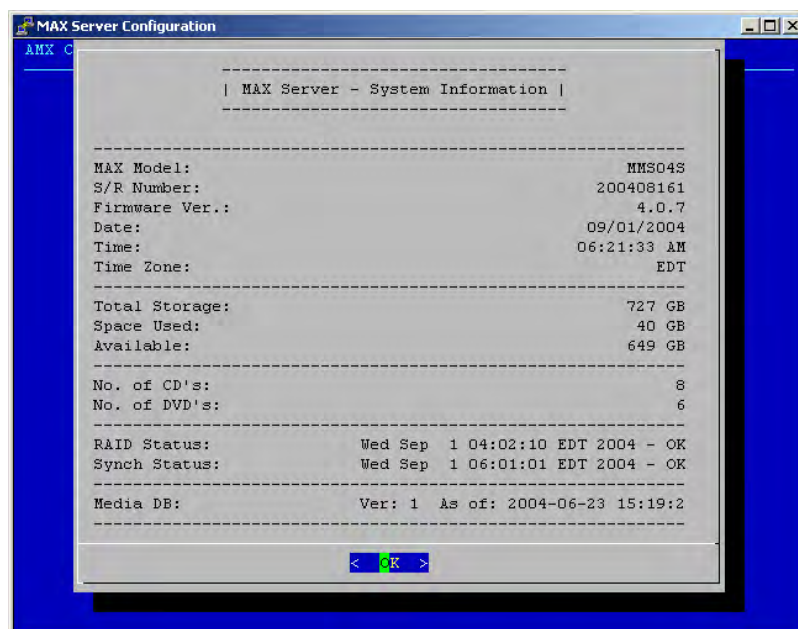
FIG. 15 MAX Admin Menu - System Information

The System Information page displays the following system hardware and status information (read-only):

- MAX Model: The model number of the MAX server.
- S/R Number: The 9-digit serial number of this MAX server.
- Firmware Ver.: The version of the firmware currently loaded in the MAX server.
- Date: Today's date (MM/DD/YY).

- Time: Current time (HH:MM:SS)
- Time Zone: Local time zone.
- Total Storage: Total amount of disc space available for content storage on this server.
- Space Used: Total amount of disc space currently being used.
- Available: Amount of disc space currently available for storage.
- No. of CD's: The number of audio CDs currently loaded in the server's library.
- No. of DVD's: The number of DVDs currently loaded in the server's library.
- RAID Status: The current status of the server's RAID array.
- Synch Status: The current synch status of the server's RAID array.
- Media DB: The version and date of the Media Database.

Click **OK** to return to the MAX Admin Menu.

IP Settings
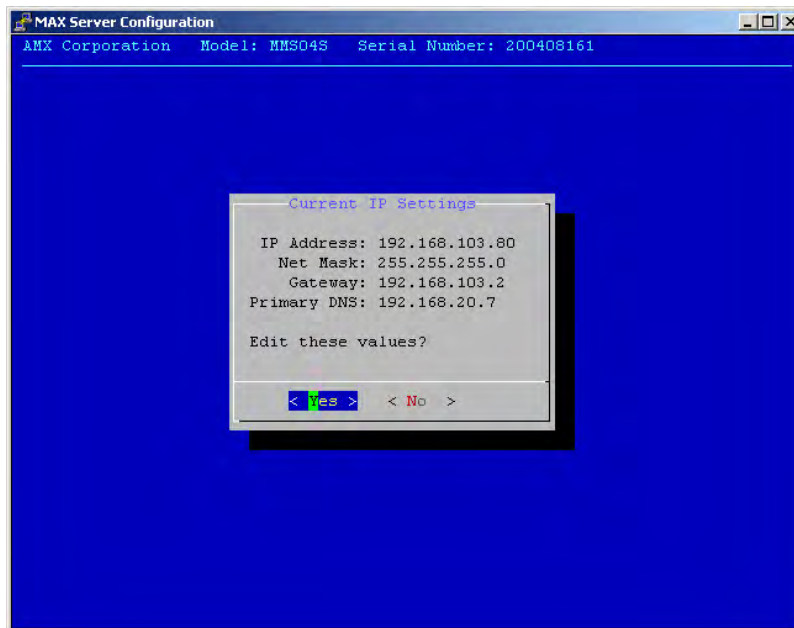
FIG. 16 MAX Admin Menu - IP Settings

These options allow you to view and configure the IP settings of the server for compatibility with your network.

- To edit these settings, press **Yes** to proceed to the next screen, and press **Yes** again to access the **Configure TCP/IP** screen (FIG. 17).

- To use *dynamic IP configuration (BOOTTP/DHCP)*, press the tab button to navigate through the elements on the page until an asterisk appears next to **Use dynamic IP configuration (BOOTP/DHCP)**, and press the spacebar to select this option. Note that once this option is selected, the other fields on this page are disabled. Press the space bar again to de-select this option.

  If this option is not selected, then you can use the remaining fields in this screen to manually specify an *IP address*, *NetMask*, *Default Gateway (IP)* and *Primary nameserver* for the MAX server.

  Press **OK** to save your changes.
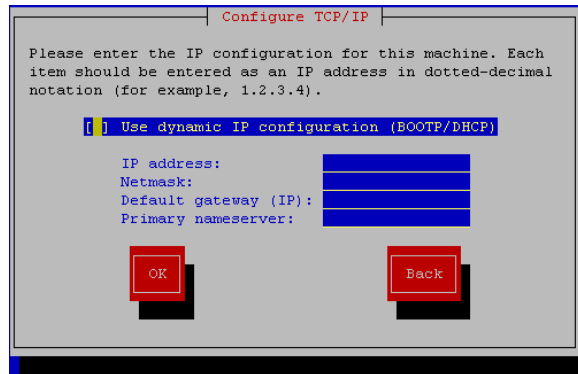
FIG. 17 MAX Admin Menu - Configure TCP/IP

Preparing the MAX Server for Receiving Periodic Updates

The IP Settings (Gateway and Primary DNS) in the WinMAX Server Configuration screen must be set correctly. To prepare your server for automatic updates:

1. Connect your PC to the Internet and open the WinMAX software.

2. Go to an MS-DOS Command Prompt on your PC and type **ipconfig /all** then press **Enter**. Note the *Default Gateway* and *first DNS Server* settings.

3. In the System Information tab, click the *Server Configuration* button to access the Server Configuration dialog.

4. Copy the *Default Gateway* and *first DNS Server* settings (from step 2) into the **Gateway** and **Primary DNS** fields in the *IP Settings* section of the Server Configuration dialog.

5. Press **Save Configuration**. The server is now ready for auto-updates.

Output Module Setup
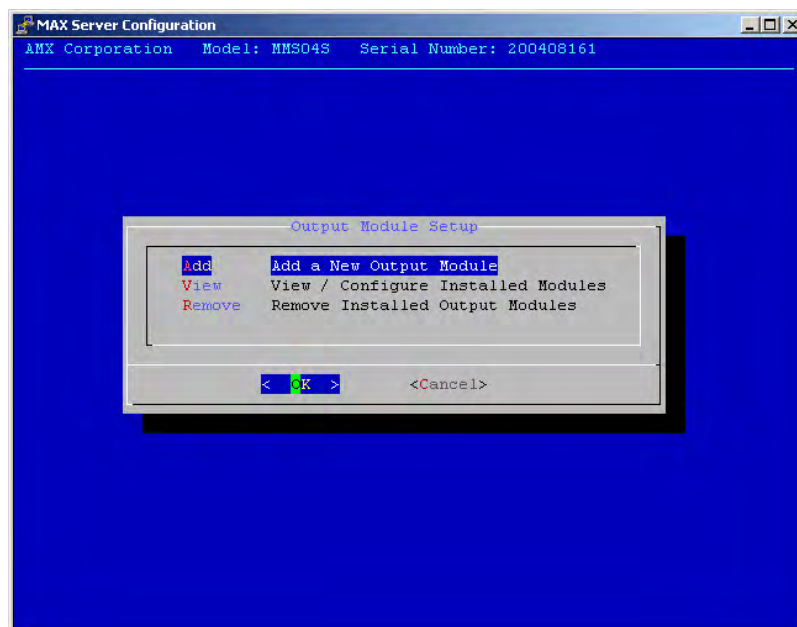
FIG. 18 MAX Admin Menu - Output Module Setup

This set of options allows you to add, view and delete external output modules (MAX-AVM audio-video modules and/or MAX-AOM audio-only modules), as well as MAX-AVP Audio-Video Players.

MAX-HT Home Theater Servers treat MAX-AVP Audio-Video Players exactly the same as MAX-AVP modules, and the process of adding AVPs is the same as that for AVPs.
MAX-AVPs are supported by HT servers only - they are not supported by MMS servers.

Adding New Modules to the System

1. Select **Add**, then select the type of module (*MAX-AOM* or *MAX-AVM*) you are adding (FIG. 19).
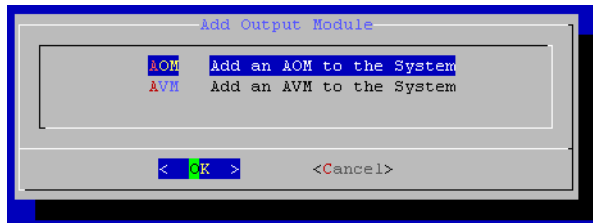
FIG. 19 Add Output Module

*If you are adding a MAX-AVP (MAX-HT04 and HT12 Home Theater Servers only), select **AVM** from the Add Output Module menu.*

2. Click **OK** to proceed. Next you must enter an *Output Number* for the new module (FIG. 20).
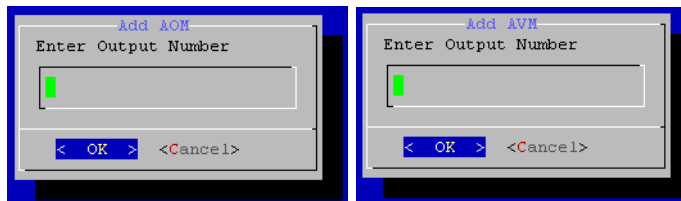
FIG. 20 Add Output Module (*AOM* and *AVM*)

- If you are adding a **MAX-AOM** (audio-only module) then the valid range depends on the type of server you are using:
  - MMS-01S, -02S and -02SB servers only support one AOM module, so the output should always be set to **1**.
  - MMS-04S, -12S and -900 servers support up to two AOM modules, so the output can be either **1** or **2**. If you are only using one AOM with these servers, the output should be set to **1**.
  - MAX-HT04 and -HT12 Home Theater servers support up to two AOM modules, so the output can be either **1** or **2**. If you are only using one AOM with these servers, the output should be set to **1**.
- If you are adding a **MAX-AVM** audio-video module, the range is 1-25 (all MAX servers support up to 25 AVMs).
- If you are adding a **MAX-AVP** Audio-Video Player (HT04/HT12 Servers only), the range is 1-25 (MAX-HT04 and MAX-HT12 servers support up to a total of 25 AVMs and/or AVPs).

Click **OK** to save your changes.

Viewing all Modules in the System

Select **View** in the Output Module Setup page (FIG. 18) to open a read-only list of all modules currently detected by the server to be installed in the system (FIG. 21).
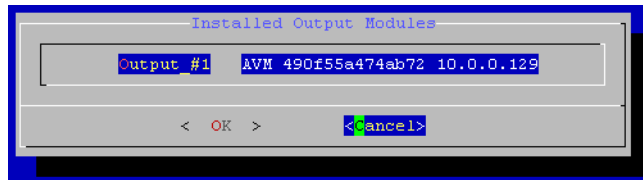
FIG. 21 Installed Output Modules

Removing Modules From the System

Select **Remove** in the Output Module Setup page (FIG. 18) to open a list of all modules currently installed in the system.

To remove one or modules from the system. select each module that you want to remove and press **Delete** (FIG. 22).
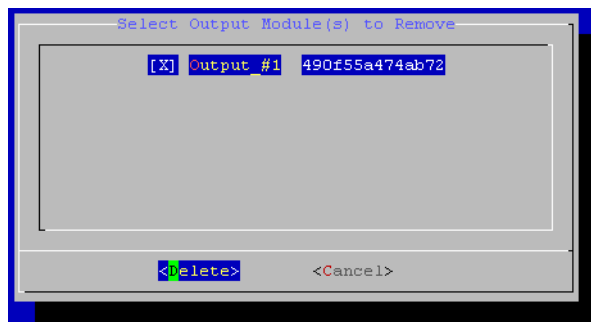
FIG. 22 Deleting the selected Output Module(s)

RAID 5 Status

This page displays (read-only) status information for the servers RAID 5 array, including individual status for each of the disc drives (FIG. 23). Press **OK** to return to the MAX Admin Menu.
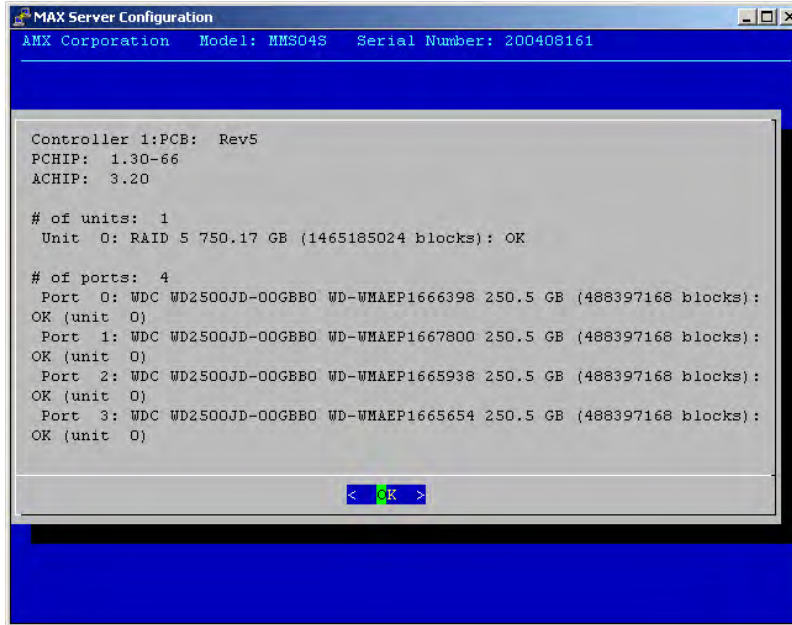
FIG. 23 MAX Admin Menu - RAID 5 Status

RAID 5 CLI

This set of options rebuilds the server's RAID array. *This option is only for use by AMX Technical Support.*

If the RAID array is rebuilt, all content on the server will be lost and the unit be rendered inoperable.

Log Management
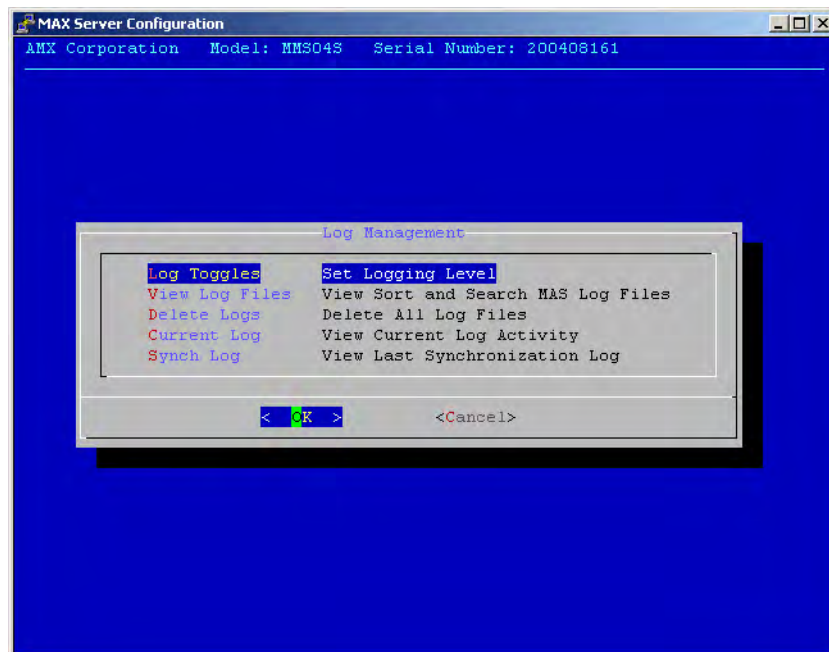
FIG. 24 MAX Admin Menu - Log Management

MAX Servers have the ability to log various internal activities, primarily for troubleshooting purposes. The options on this page allow you to view and delete log files, and control the logging level for the server.

Specifying Logging Levels

Select **Log Toggles** in the *Log Management* menu to access the *Select Log Options* menu (FIG. 25), where you can select which events to include in the logs (*RS232*, *ADA*, *TCP/IP*, and *DEBUG*).
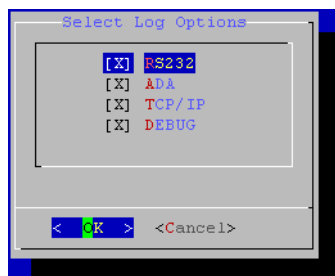
FIG. 25 Select Log Options

By default, all of the log options are selected for inclusion. Use the spacebar to select/deselect these options as desired.

Viewing Log Files

To view the log(s) specified in the Select Log Options page, select **Current Log** from the *Log Management* menu. An example log file is shown in FIG. 26.
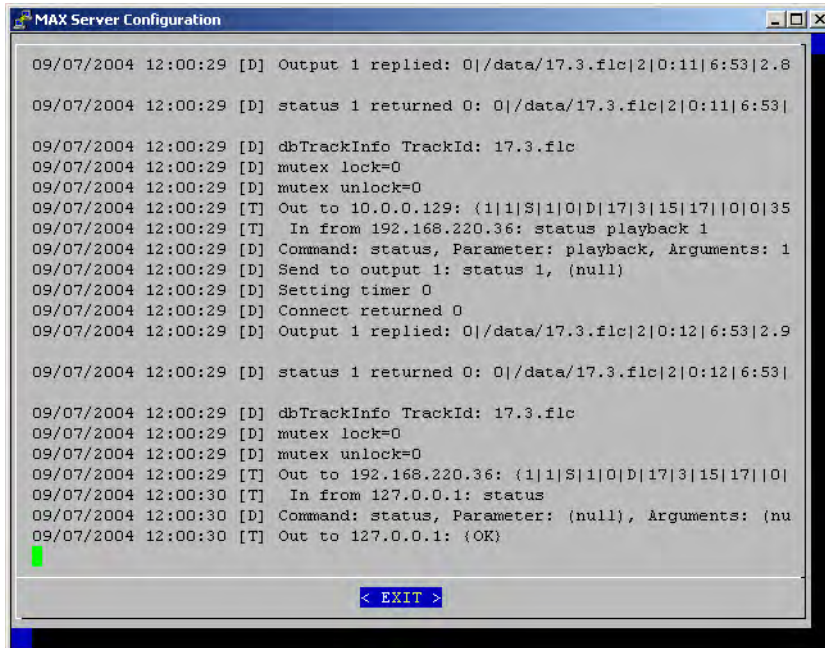
FIG. 26 Example of a log display

Deleting Log Files

Select **Delete Log Files** from the *Log Management* menu. The system will prompt you to verify this action before the files are erased.

Date, Time Locale

This set of options allows you to specify/adjust the system's date, time and location settings (FIG. 27).
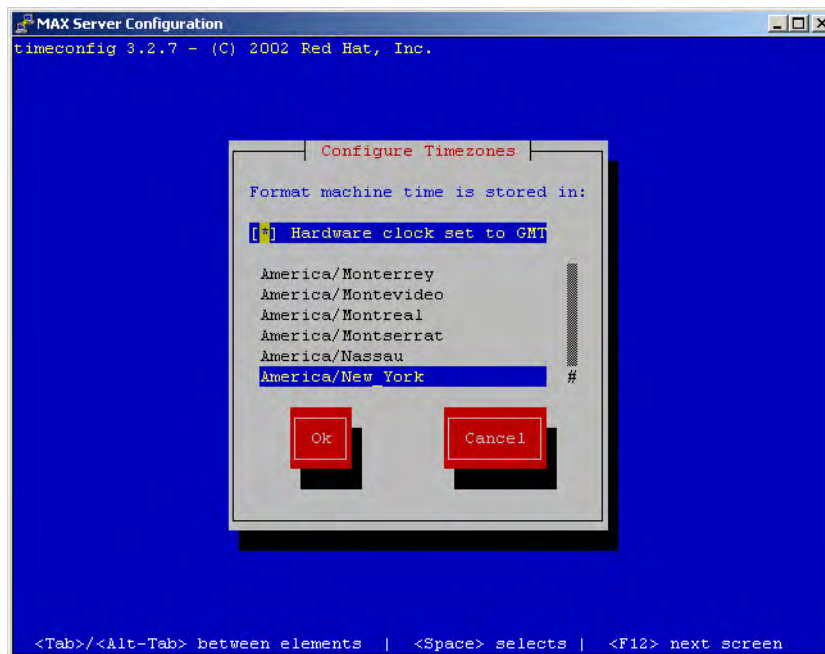
FIG. 27 MAX Admin Menu - Date, Time Locale

Setting System Date and Time

When you select **Date, Time, Locale** from the MAX Admin Menu, a wizard is invoked which steps you through the process of setting the date and time for the system:

1. The first screen to appear is the *Configure Timezones* screen (FIG. 28).
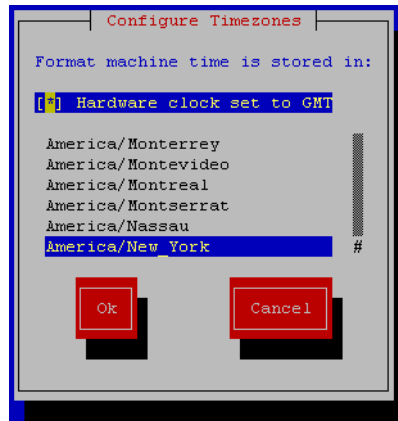
FIG. 28 Date, Time, Locale - Configure Timezones

2. Select wether to set the hardware clock to GMT (*Greenwich Mean Time*). Use the tab key to navigate through the elements on the page, and use the spacebar to select or de-select this option.

3. Scroll through the list to highlight the correct time zone for the server. Use the spacebar to make your selection.

4. Click **OK** to proceed to the *Set New Date* screen (FIG. 29). Use this screen to set the current Month, Year and Day for the server. To adjust these values, you must first move the highlighted cursor into the area that you want to adjust. Then, use the up and down arrow keys to adjust the selected element.

FIG. 29 Date, Time, Locale - Set New Date

- To change the month, move the highlighted cursor to the Month window and use the up/down arrow keys to scroll forward or backward through the months. Press the spacebar to select the correct month.
- To change the year, move the highlighted cursor to the Year window and use the up/down arrow keys to scroll forward or backward through the years. Press the spacebar to select the correct year.
- To change the date, move the highlighted cursor to the Date window and use the arrow keys to navigate to the correct date. Press the spacebar to select the correct date.

5. Click **OK** to proceed to the *Set New Time* screen (FIG. 30), where you can set the system time (in HH:MM:SS format). To adjust the time settings, move the highlighted cursor to the time field that you want to adjust and use the up and down arrow keys to adjust the value up or down.
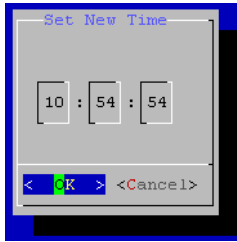
FIG. 30 Date, Time, Locale - Set New Time

6. Click **OK** to proceed to the final screen which displays the new Date and Time settings (FIG. 31). Click **OK** to save your changes and return to the MAX Admin Menu.
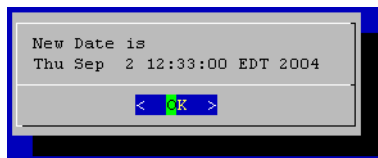
FIG. 31 Date, Time, Locale - New Date and Time settings

Shell

This option opens an MS-DOS window for sending specific commands directly to the server.
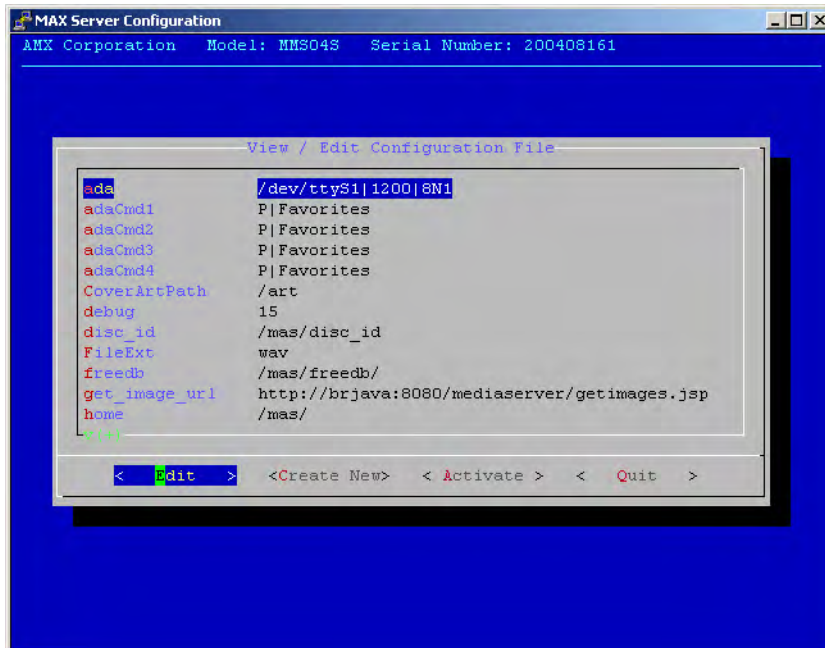
Modify max.ini

FIG. 32 MAX Admin Menu - Modify max.ini

These options on this page are only for use by AMX Technical Support.

Authenticate HDD

The set of options on this page allow you to add, remove and view hard disc drives (HDDs) in the MAX server (FIG. 33).
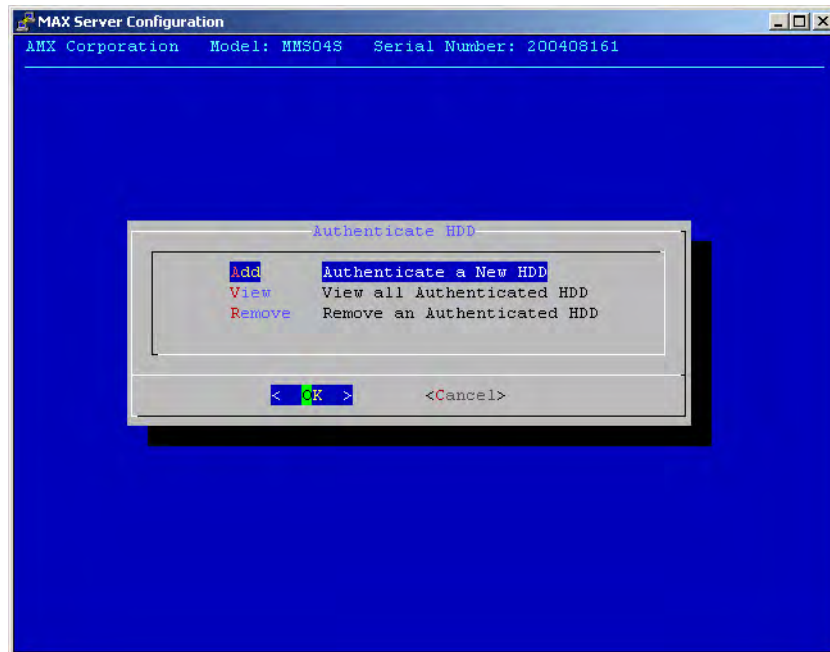
FIG. 33 MAX Admin Menu - Authenticate HDD

For detailed instructions on replacing HDDs in MAX Servers, refer to the Replacing HDDs in MAX Servers section on page 51.

The options in the Authenticate HDD menu include:

- **Add**: Select to authenticate a new HDD, as described in the previous section.
- **View**: Select to view all the serial numbers and keys for HDDs in the system.
- **Remove**: Select to remove a selected HDD from the system. One or more drives can be removed at a time.

Authenticating a new HDD

1. Select **Authenticate a New HDD** from the MAX Admin Menu.
2. Enter the 8-digit serial number of the HDD. (printed on a decal located on the bottom panel of the HDD).
3. Enter the 16-digit authentication key supplied by AMX for that HDD (printed on a slip of paper included with the replacement drive).
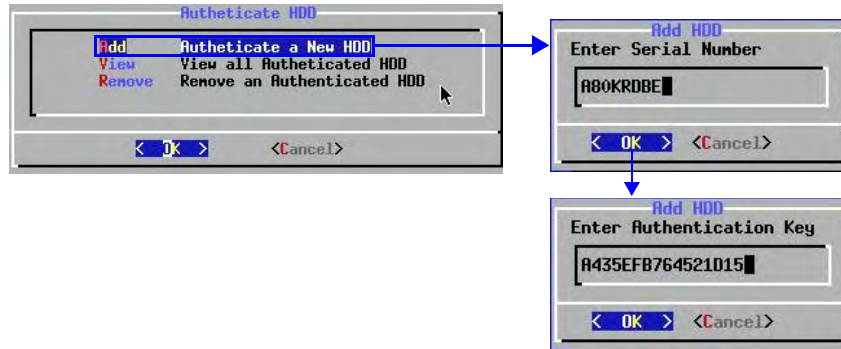
FIG. 34 Admin Menu, Authenticate HDD, and Add HDD dialogs

Viewing All HDDs In the MAX Server

Select **View** from the Authenticate HDD menu to view all the serial numbers and keys for HDDs in the system (FIG. 35). Note that this list only indicates HDDs that have been successfully authenticated.
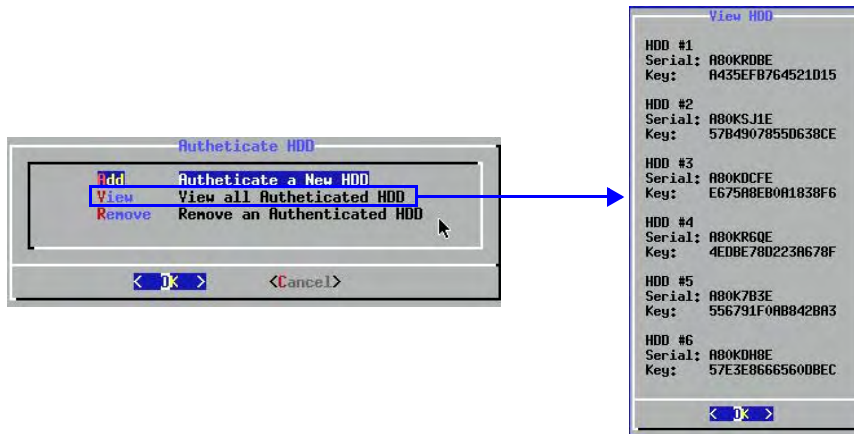
FIG. 35 Authenticate Menu - View HDD

Removing HDDs From the MAX Server

Select **Remove** from the Authenticate HDD menu to remove a selected HDD from the system. One or more drives can be removed at a time.

Select the HDD(s) that you want to remove from the system, then select **Delete** (FIG. 36).
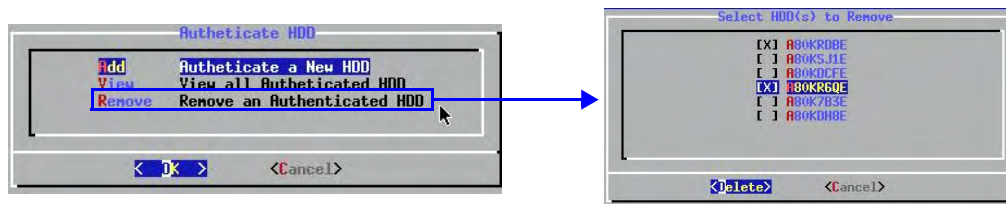
FIG. 36 Authenticate Menu - Select HDD(s) to Remove dialogs

Once the HDD(s) have been removed from the System, they can be physically removed from the server without damaging the RAID array.

Parental Control
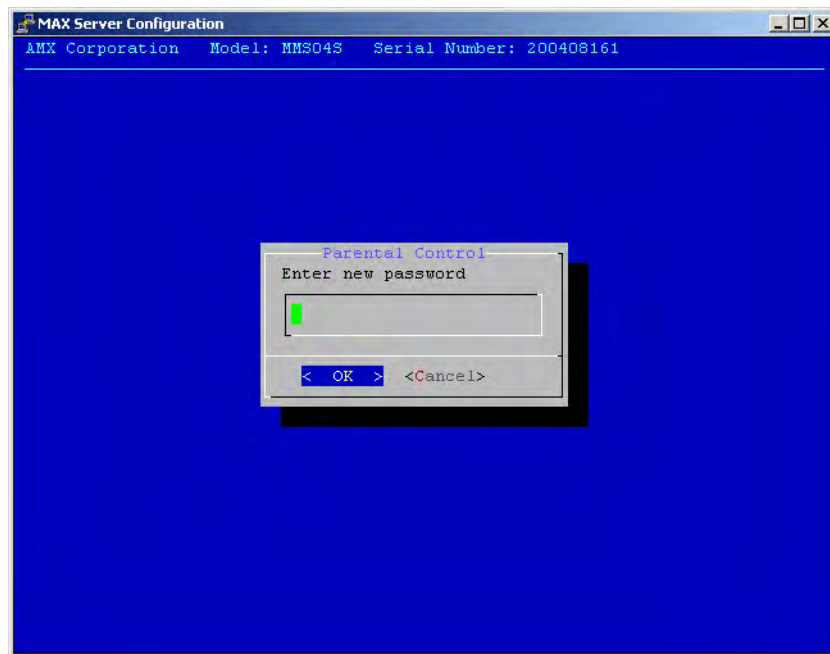
FIG. 37 MAX Admin Menu - Parental Control

This page allows you to enable parental control functionality. To enable parental control, enter a new parental control password and select **OK**.

Online Tech Support
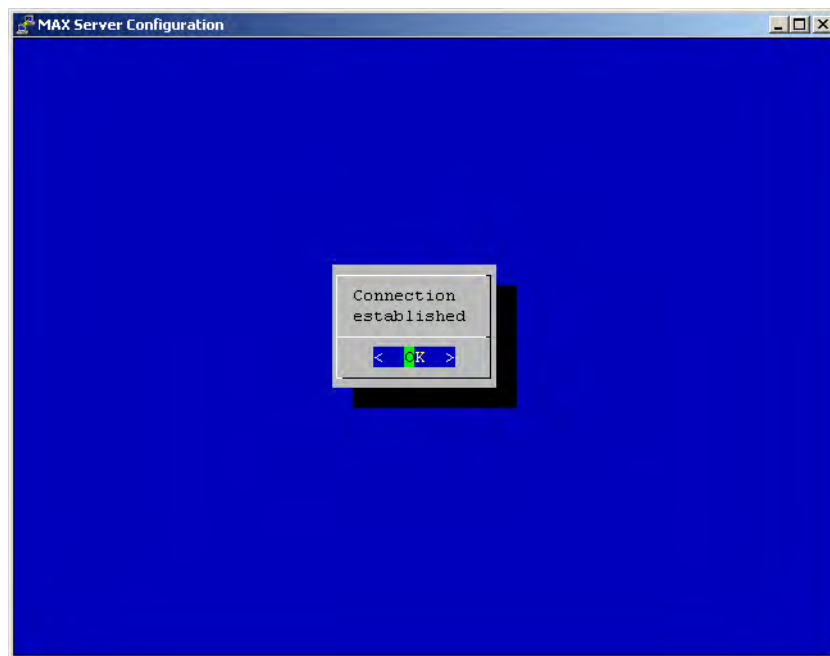
FIG. 38 MAX Admin Menu - Online Tech Support

This option allows you to establish a connection between the MAX server and AMX Technical Support, for remote troubleshooting and support operations.

Cover Art

This option retrieves updated cover art for discs in the MAX server's media library.

Change Region

The information in this document concerning region code settings does not apply to the MMS-12S Server, since the MMS-12S does not feature a DVD-ROM drive.

The region code setting for the MAX Server's internal DVD-ROM drive must match the region code of the DVD(s) you are attempting to load.

If a DVD is inserted that has a region code that is different from that of the DVD-ROM in the MAX Server, you will receive an error message indicating that there is no disc in the drive when you press the *Identify Disc* button in the Record tab.

By default, the MAX Server's DVD-ROM drives are set to read DVDs with Region 1 encoding (for U.S., Canada and U.S. Territories). Depending on what region of the world you are installing and operating the MAX, you may need to change the region code setting in order to read DVDs.

NOTICE: You can change the region code setting on your MAX Server's DVD-ROM drive up to **five times, and no more**. The region code setting is locked down in the DVD-ROM drive the fifth time it is set, **permanently** setting to that last region code setting. **At that point there is no way to change the region code setting again.** The number of resets still available is indicated at the top of the Change Region page.

The region code setting for the MAX Server's DVD-ROM can be changed via the **Change Region** option in MAX Admin Menu (accessible via the Server Configuration option in WinMAX):

The number of region code setting resets still available is indicated here (**Max resets = 5**).
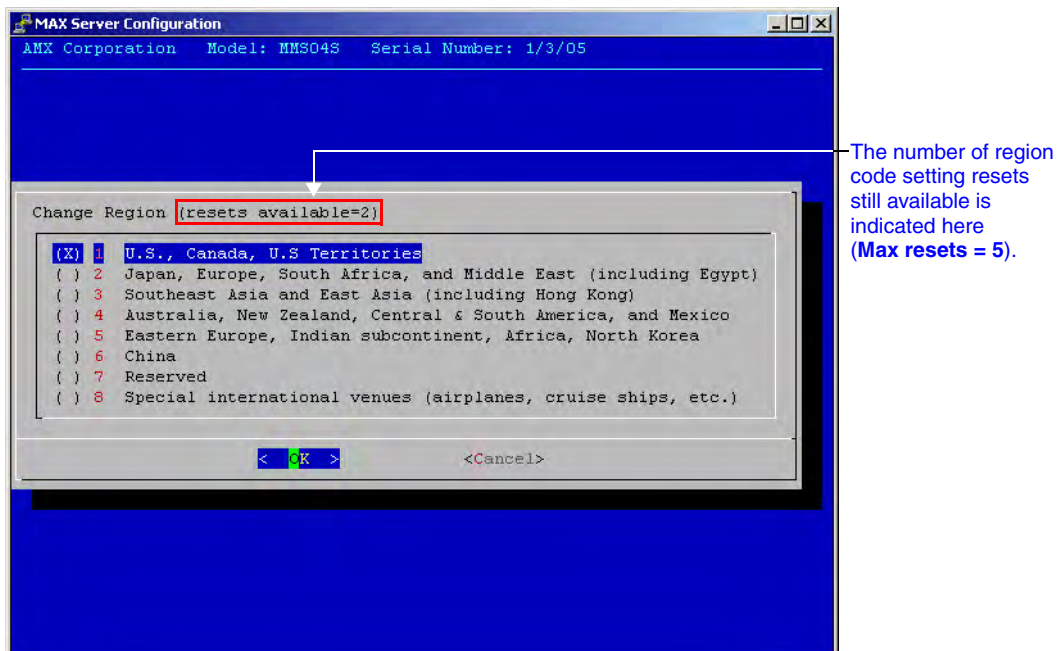
FIG. 39 MAX Admin Menu - Change Region

In the event that you expect to load large numbers of DVDs with different region codes, you should group the DVDs together by region to minimize the number of times you'll have to change the region

code setting (keeping in mind that it can only be changed a maximum of five times). Also, insure that the last region code setting made matches the region in which the MAX will be installed.

Changing The Region Code Setting On Your MAX Server

1. Insert a DVD with your local region coding in the MAX Server's DVD-ROM drive.
2. In the *System Information* tab, click the **Server Configuration** button to access the Admin Menu.
3. Use the arrow button on your keyboard to scroll down and highlight the **Change Region** option.
4. Press the Return (Enter) to open the *Change Region* page.
5. Use the up/down arrow buttons on your keyboard to select the appropriate region code setting for your region, and press the spacebar to make your selection (indicated by an "X" to the left of the number).

The number of resets still available is indicated at the top of the Change Region page (FIG. 39).

Update Firmware
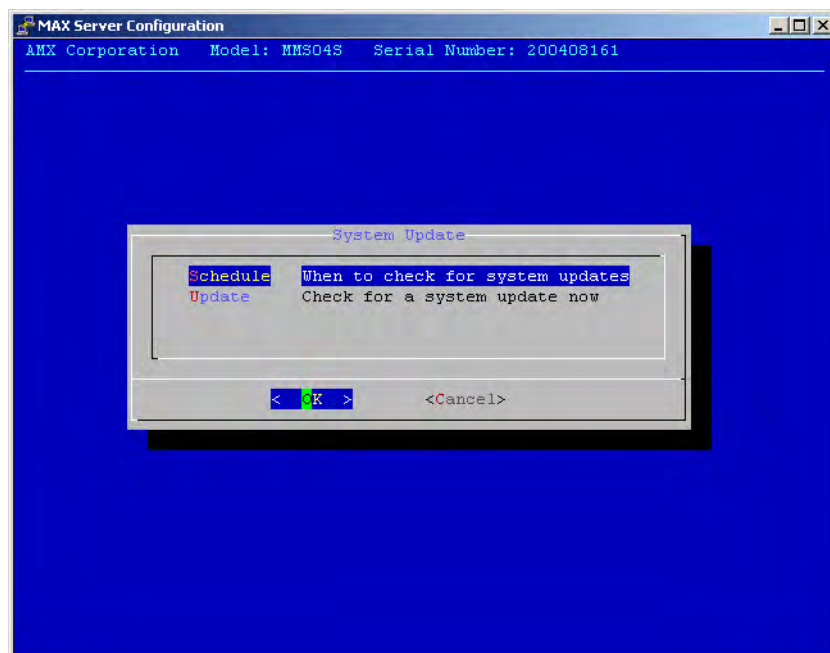
FIG. 40 MAX Admin Menu - Update Firmware

This set of options allows you to schedule when the server should automatically check for firmware updates (day of week and time), and to manually update the system immediately (if updated firmware is detected).

Scheduling Automatic Firmware Updates

Select **Schedule** from the *Update Firmware* page to schedule a day of the week and time to check for firmware updates.

The first page that is invoked is the *Day Of Week* page (FIG. 41). Use the spacebar to select the day that you want the check to be performed. Select OK to save your changes and proceed to the *Select Time* page where you will specify a time for the check to be performed.

If an update is detected, the firmware will automatically be downloaded and installed on the MAX server.
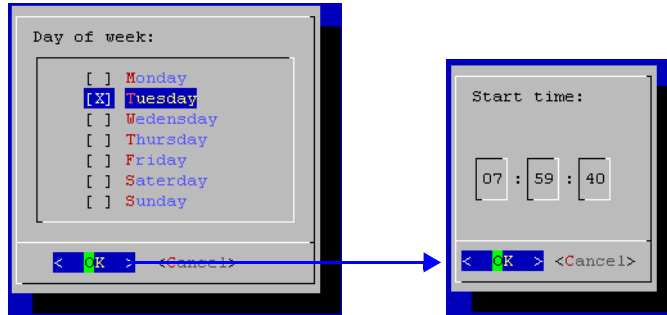
FIG. 41 Update Firmware > Schedule > Day of Week and Select Time options

Manually Updating the Firmware

Select **Update** from the *Update Firmware* page (FIG. 40) to manually check for firmware updates for the server. If an update is detected, it is automatically downloaded and installed.

Restart MAX deamon

This option restarts the MAX daemon. Restart the daemon to activate any configuration changes made via the options in the MAX Admin menu.
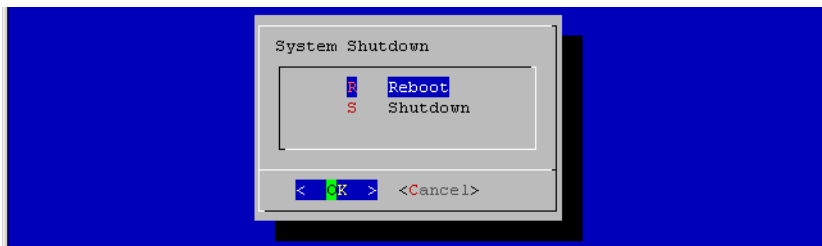
Shutdown

FIG. 42 MAX Admin Menu - Shutdown

This set of options allows you to either **Reboot** or **Shutdown** the MAX server.

Exit

This option exits the MAX Admin menu.

Exit and Disconnect

This option exits the MAX Admin menu and terminates the connection to AMX Support (established via the *Online Tech Support* option).

DVD Region Code Settings

Overview

All DVD players and most DVD discs are labeled for operation within a specific geographical region in the world. This is know as a *Region Code*.

DVD discs are encoded for a specific region, and must match the region code of the physical DVD drive to be played. Region code recognition only applies to the physical DVD disc and the physical DVD-ROM drive. For example, the U.S. is in Region 1. This means that all DVD players sold in the U.S. are made to Region 1 specifications. As a result, Region 1 players can only play Region 1 DVD coded discs.

- Regional codes are entirely optional for the maker of a DVD disc. Discs without region locks will play on any DVD player in any country.
- DVD discs may have multi-region codes, such as Region 1,2 and 4 and will play in drives coded with the corresponding region code. On the back of each DVD package, you will a find a region number (1 thru 6).
- On a MAX system, if a DVD disc is inserted into a DVD-ROM drive that has a region code different from that of the DVD, you will receive an error message indicating that there is no disc in the drive when you attempt to identify the disc (via the Identify *Disc* option in the WinMAX software application.

> **NOTE**
>
> *The information in this section does not apply to the MMS-12S Server, since the MMS-12S does not feature a DVD-ROM drive.*

DVD Regions (1-6)

The following table lists the six international DVD Region Codes used by all DVD-ROMs:

• REGION 1:	USA, Canada
• REGION 2:	Japan, Europe, South Africa, Middle East, Greenland
• REGION 3:	S.Korea, Taiwan, Hong Kong, Parts of South East Asia
• REGION 4:	Australia, New Zealand, Latin America (including Mexico)
• REGION 5:	Eastern Europe, Russia, India, Africa
• REGION 6:	China
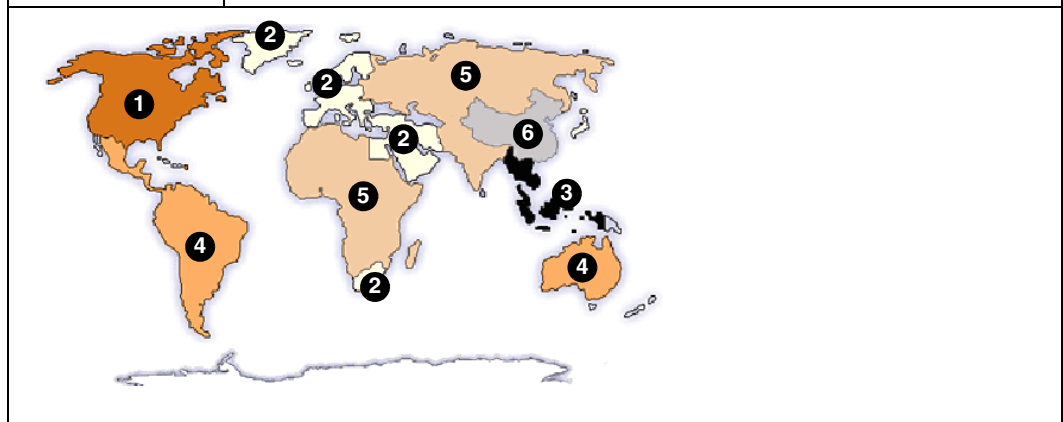
Default Region Code Setting

By default, the MAX Server's DVD-ROM drives are set to read DVDs with **Region 1** encoding (for U.S., Canada and U.S. Territories). Depending on what region of the world you are installing and operating the MAX, you may need to change the region code setting in order to read DVDs.

There are three sources used for loading content onto a MAX server:

1. MDL200 with BulkRipper software running on Windows PC.
2. WinMAX running on a Windows PC - load content from local DVD/CD-ROM drive on PC.
3. MAX Server DVD/CD ROM drive - use WinMAX software for accessing the server's DVD-ROM drive.

All of the above methods require the use of physical DVD/CD ROM drives that are covered by the DVD CCA licensing organization. Each DVD-ROM drive adheres to the requirement that the drive must be set to a region specific code to play authorized DVDs for that region. The requirement allows for the DVD-ROM region code to be changed a maximum of five (5) times in a drive. The fifth time, the region code is "locked" permanently in the drive. This procedure is mandated for all DVD-ROM manufactures that carry the DVD logo and applies to all DVD-ROM drives used throughout the MAX system.

- Using Windows, the properties of the physical DVD drives can be accessed and region code changed as required.
- By default, the MAX Server, MDL200 and MAX-AVP DVD-ROM drives are set to read DVDs with Region 1 encoding (for U.S., Canada and U.S. Territories). Depending on what region of the world you are installing and operating the server, you will need to change the region code setting of the DVD-ROM drive in the server, MDL200 and/or PC in order to read DVDs from other regions.

Changing the Region Code Setting on MAX Servers

MAX-MMS Servers (MMS-01S, -02S, -02SB, -04S and -900), MAX-HT Servers (MAX-HT04 and -HT12), and the MDL200 Multi-Disc Loader feature internal DVD-ROM drives. The region code setting for the internal DVD-ROM must match the region code of the DVD disc(s) you are attempting to load.

If the region code setting on the DVD-ROM does not match that of the DVD disc that is inserted into the drive, the disc will not be recognized.

The region code setting for the MAX Server's DVD-ROM can be changed via the **Change Region** option in MAX Admin Menu (accessible via the S*erver Configuration* option in WinMAX):

The number of region code setting resets still available is indicated here (Max resets = 5).
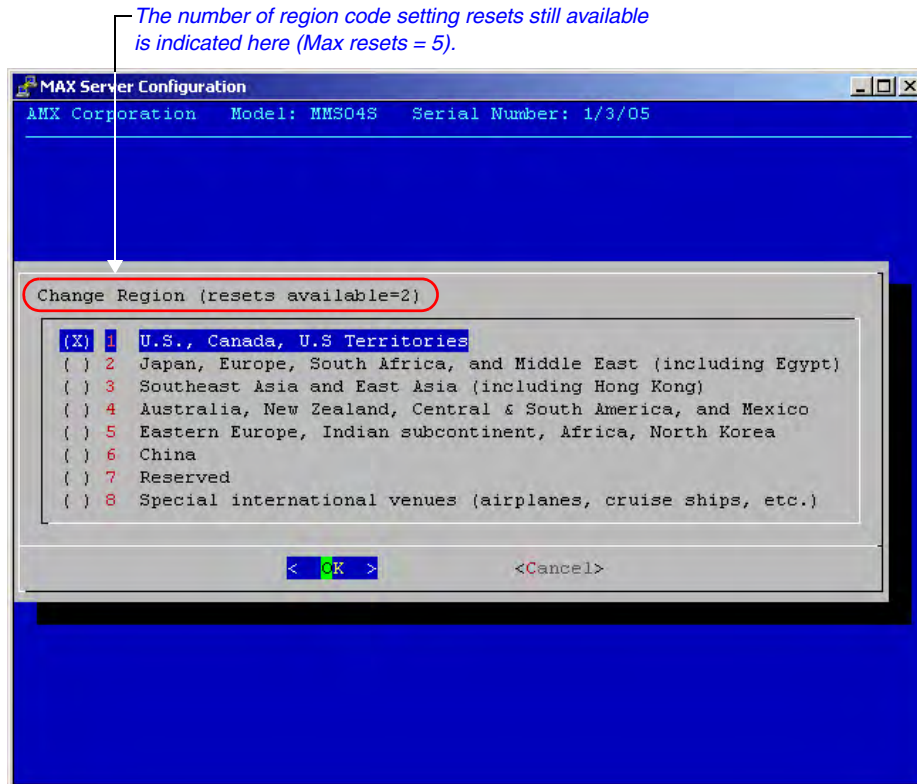
FIG. 43 MAX Admin Menu - Change Region

CAUTION

You can change the region code setting on your MAX Server's DVD-ROM drive up to five times, and no more. The region code setting is locked down in the DVD-ROM drive the fifth time it is set, permanently setting to that last region code setting. At that point there is no way to change the region code setting again.

The number of resets still available is indicated at the top of the Change Region page (see FIG. 43).

In the event that you expect to load large numbers of DVDs with different region codes, you should group the DVDs together by region to minimize the number of times you'll have to change the region code setting (keeping in mind that it can only be changed a maximum of five times).

Also, insure that the last region code setting made matches the region in which the MAX will be installed.

Changing the DVD Region Code Setting On MAX Servers

1. Insert a DVD with your local region coding in the MAX Server's DVD-ROM drive.
2. In the *System Information* tab, click the **Server Configuration** button to access the Admin Menu.
3. Use the arrow button on your keyboard to scroll down and highlight the **Change Region** option.
4. Press the Return (Enter) to open the *Change Region* page.
5. Use the up/down arrow buttons on your keyboard to select the appropriate region code setting for your region, and press the spacebar to make your selection (indicated by an "X" to the left of the number).

The number of resets still available is indicated at the top of the Change Region page (FIG. 43).

Refer to the *MAX Admin Menu* section on page 27 for information on the other options available in the Admin Menu.

MAX Servers: HT Home Theater and MMS Multimedia Servers

MAX Servers DVD Drives - Supported Formats

DVD Drives - Compatible Formats

The following tables indicate the compatibility of several common DVD Drives used in MAX Servers, relative to DVD formats:

DVD Drives - Compatible Formats								
Drive Model	**DVD-ROM**	**DVD-R**	**DVD-RW**	**DVD+R**	**DVD+RW**	**DVD-RAM**	**DVD+R DL**	**DVD±RW**
Panasonic CW-8124-B	X	X	X			X		
Plextor PX-504A		X	X	X	X			
Plextor PX-708A		X	X	X	X			
Sony CRX820E								
Sony CRX835E								
Sony CRX850E	X	X	X	X	X		X	
Toshiba SD-R2412	X	X	X			X		
Toshiba SD-R2512	X	X	X			X		

MAX Servers - DVD Drives Used

The following table indicates the type of DVD Drive used in each model of MAX Server:

MAX Servers - DVD Drives Used								
	Panasonic	**Plextor**	**Plextor**	**Sony**	**Sony**	**Sony**	**Toshiba**	**Toshiba**
	CW-8124B	**PX-504A**	**PX-708A**	**CRX820E**	**CRX835E**	**CRX850E**	**SD-R2412**	**SD-R2512**
MMS-01S							X	X
MMS-02S							X	X
MMS-02SB							X	X
MMS-04S							X	X
MMS-12S	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
MMS-900					X			
MMS125		X	X					
MMS200		X	X					
MMS300		X	X					
MMS350		X	X					
MMS400								
MMS900				X	X			
MMS-HT4						X		
MMS-HT12						X		
MAX-AVP	X							

MDL Series - DVD Drives

The following table indicates the compatibilities of the DVD Drives in the MDL Series (Powerfile):

MDL Series (PowerFile) - DVD Drives	
C200ROM and C200	• DVD-ROM, DVD-R
R200ROM	• DVD-ROM, DVD-R, DVD-RW, DVD+R, DVD+RW, DVD-RAM,DVD+/-RW
R200ROM	• Reads all formats listed above

Replacing HDDs in MAX Servers

Overview

MAX MMS and HT servers support hot-swappable hard disk drives (HDDs), accessible behind the removable faceplate, on the front panel. Typically a new HDD will be required only if an existing one has failed.

- The MMS-01S, MMS-02S, MMS-04S and MMS-12S servers all utilize 250GB hard drives, and require the *MMS-HDD250G* 250GB drive (**FG 2178-250**) for replacements.
- The MMS-900 server utilizes 300GB hard drives, and requires the *MMS-HDD300G* 300GB drive (**FG 2178-300**) for replacements.
- MAX-HT servers utilize 400GB hard drives, and require the 400GB drive (**FG 2178-400**) for replacements.

Only HDDs provided by AMX can be used as replacements in MMS servers, and in order to replace a HDD in an MMS server, the drive must be installed and authenticated according to the steps outlined in this document.

Replacing HDDs in MMS Servers

There are several operations that are required to successfully replace an HDD in a MMS server, all of which are described in the following subsections:

1. Identify the drive that needs to be replaced.
2. The physical removal of the damaged HDD, and the subsequent installation of the replacement HDD.
3. A rebuild of the RAID array on the new HDD (required in order to add it to the server's RAID array).
4. Authentication of the new HDD with the MMS server. Note that before the HDD can be authenticated to the server it must first be added into the array.

The MMS-01S server does not utilize a RAID disk-drive system. In this case there is no need to rebuild the array (as described below), but the replacement HDD still needs to be authenticated (see "Step 4: Authenticate the New HDD" below).

Step 1: Identify the Drive That Needs To Be Replaced

To identify the drive that needs to be replaced, you'll use the server's built-in Disk Management Utility tool. This requires that you have a PC connected to the MMS:

- If you intend to connect to the MMS via a LAN connection, verify that the PC is communicating properly with the network.
- Use an RJ-45 twisted pair cable to connect the Ethernet port on the MMS to the LAN that your PC is on.

Once you have established communication between the MMS server and your PC, you'll use your web browser to access the server's Disk Management Utility interface to see which port has failed. You'll need this information to identify the physical HDD that needs to be pulled from the unit and replaced:

1. Launch a web browser (i.e. Internet Explorer).
2. Enter the IP address of the target MMS server in the address bar (example: http://192.168.1.30:1080). You can use the WinMAX program to determine the server's IP address (displayed in the System Information tab).

Don't forget to include the port number.

If you are using Mozilla as your browser, you'll need to override the security that blocks port 1080. To unblock port 1080, add the following line (located at /usr/lib/ mozilla/defaults/pref/all.js):
pref("network.security.ports.banned.override","1080")

3. Press **Enter** to open the Disk Management Utility - Home Page (FIG. 44).

| Home | Details | Monitor | Alarms | Settings | Configure | Help |

localhost.localdomain

SCSI ID 2 3ware 7506-8 ATA RAID Controller

- Array Unit 0 Striped with Parity 64K (RAID 5) 1.75 TB   OK

  - Port 0 Maxtor 5A250J0   251.00 GB   OK
  - Port 1 Maxtor 5A250J0   251.00 GB   OK
  - Port 2 Maxtor 5A250J0   251.00 GB   OK
  - Port 3 Maxtor 5A250J0   251.00 GB   OK
  - Port 4 Maxtor 5A250J0   251.00 GB   OK
  - Port 5 Maxtor 5A250J0   251.00 GB   OK
  - Port 6 Maxtor 5A250J0   251.00 GB   OK
  - Port 7 Maxtor 5A250J0   251.00 GB   OK

SCSI ID 1 3ware 7506-8 ATA RAID Controller

- Array Unit 0 Striped with Parity 64K (RAID 5) 1.75 TB   OK

  - Port 0 Maxtor 5A250J0   251.00 GB   OK
  - Port 1 Maxtor 5A250J0   251.00 GB   OK
  - Port 2 Maxtor 5A250J0   251.00 GB   OK
  - Port 3 Maxtor 5A250J0   251.00 GB   OK
  - Port 4 Maxtor 5A250J0   251.00 GB   OK
  - Port 5 Maxtor 5A250J0   251.00 GB   OK
  - Port 6 Maxtor 5A250J0   251.00 GB   OK
  - Port 7 Maxtor 5A250J0   251.00 GB   OK

FIG. 44 Disk Management Utility - Home page

4. Click on the **Configure** tab at the top of the screen to access the *Configure* page (FIG. 45) which lists all drives in each array and their status. If a drive has failed, it will be labeled "Degraded" rather than "OK".
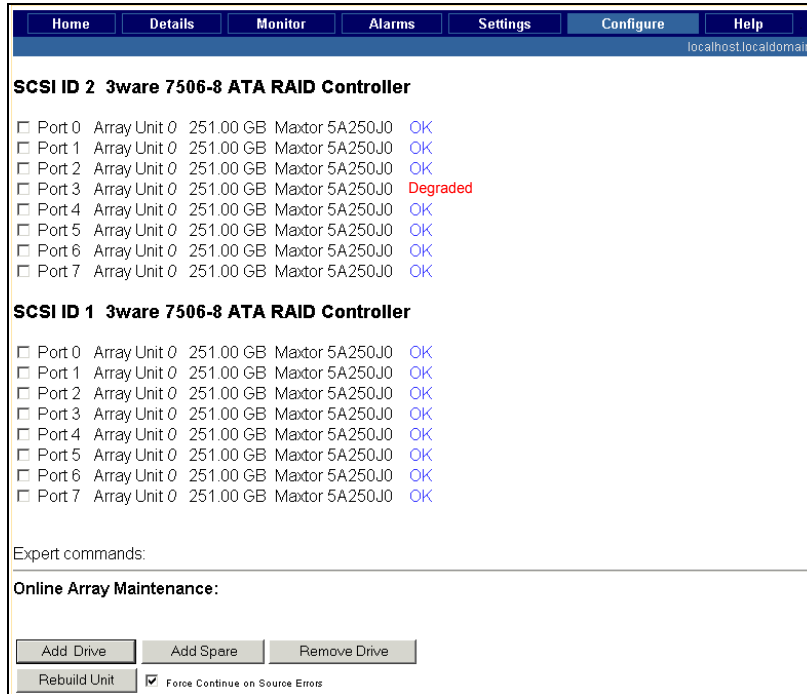
FIG. 45 Disk Management Utility - Configure page

5. Note the **Port Number** of the Degraded drive, and determine which physical drive needs to be replaced in the server:
   - For MMS servers, refer to the charts in FIG. 46 to determine the physical location of the drive in question:

PORT 0	PORT 1	PORT 2	PORT 3

MMS-04S (front)

PORT 2	PORT 5	PORT 8	PORT 11
PORT 1	PORT 4	PORT 7	PORT 10
PORT 0	PORT 3	PORT 6	PORT 9

MMS-12S (front)

PORT 0	PORT 6	PORT 12	PORT 18
PORT 1	PORT 7	PORT 13	PORT 19
PORT 2	PORT 8	PORT 14	PORT 20
PORT 3	PORT 9	PORT 15	PORT 21
PORT 4	PORT 10	PORT 16	PORT 22
PORT 5	PORT 11	PORT 17	PORT 23

MMS-900 (front)

FIG. 46 Port to HDD correlation - MMS-04S, MMS-12S and MMS-900 servers

Also note that the LED on the degraded drive should blink to indicate that it needs to be replaced.

Once you have determined which drive needs to be replaced, you can proceed to physically removing the bad drive, and installing the replacement drive.

Step 2: Physical Removal and Replacement of the Drives

1 Push tab to the right to unlock the hinged front panel

MMS Servers

hinge

Flip the hinged front panel out,
2 and use it as a handle to pull the
drive/tray assembly out of its slot.
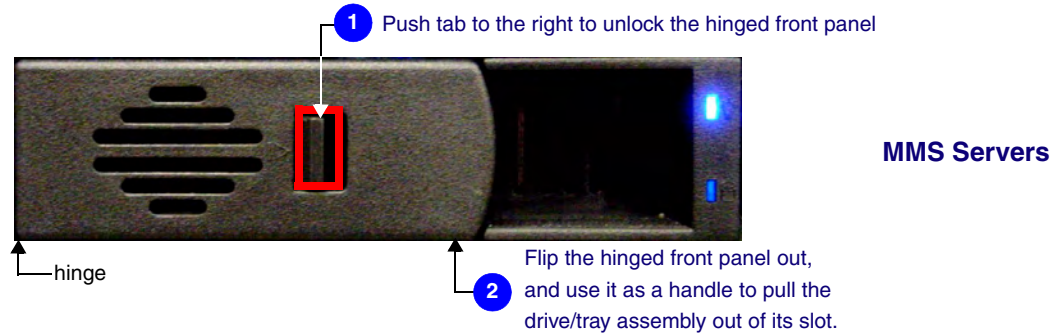
FIG. 47 Removable drive/tray assembly - MMS Servers (front panel)

1. Remove the faceplate from the front panel of the server.
2. Remove the damaged HDD. Each HDD is mounted in a tray that slides in and out of the server. To remove the drive/tray assembly (FIG. 47):
   a. Push the tab on the front of the drive tray to the right to unlock the hinged front panel. Flip the hinged panel out and use it as a handle to gently pull the drive/tray assembly out of its slot.
   b. Remove the drive from the drive tray. The drive is secured to the tray with four screws on the bottom panel.
3. Install and secure the replacement drive into the drive tray.
4. Slide the replacement drive/tray assembly fully into the slot, and push the hinged front panel back into its locked position. The LEDs on the front of the HDD should light to indicate that it has been connected and is communicating properly.
5. Replace the faceplate on the server.

Step 3: Rebuild the RAID Array

Once the new HDD has been installed, the drive must be added to the server's RAID array. This entails rebuilding the RAID array on the new HDD.

To rebuild the RAID array, you must have a PC connected to the MMS server:

- If you intend to connect to the MMS via a LAN connection, verify that the PC is communicating properly with the network.
- Use an RJ-45 twisted pair cable to connect the Ethernet port on the MMS to the LAN that your PC is on.

Once you have established communication between the MMS server and your PC, you'll use your web browser to access the server's Disk Management Utility interface:

1. Launch a web browser.
2. Enter the IP address of the target MMS server in the address bar (example: http://192.168.1.30:1080). You can use the WinMAX program to determine the server's IP address (displayed in the *System Information* tab). Don't forget to include the port number.
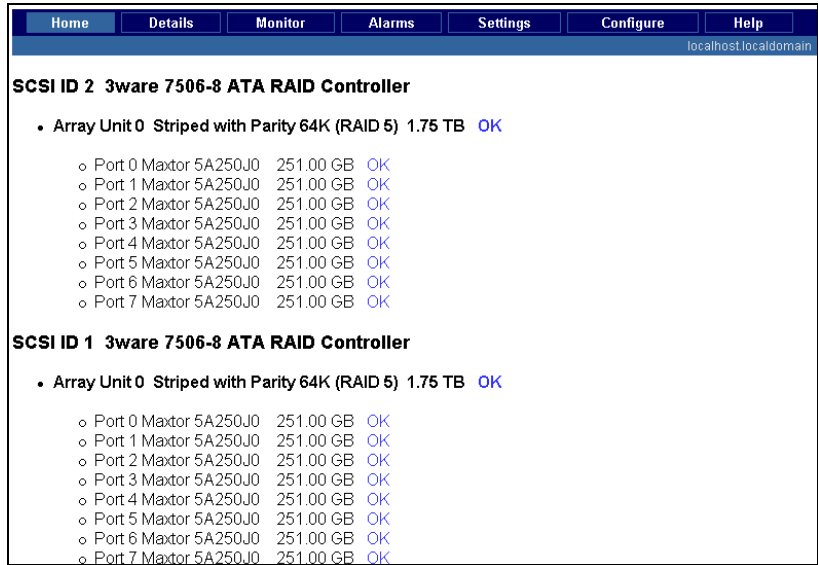3. Press **Enter** to open the Disk Management Utility - Home Page (FIG. 44).
4. Click on the **Configure** tab at the top of the screen to access the *Configure* page (FIG. 45) which lists all drives in each array and their status. If a drive has failed, it will be indicated on this page (labeled "Degraded" rather than "OK").

5. Check the box next to the failed drive that you are removing, and click the **Remove Drive** button at the bottom of the screen.

6. Check the box again and click the **Add Drive button** at the bottom of the page.

7. Check all boxes next to all the drives (only in the array that contains the replaced HDD).

8. Check the **Force Continue On Source Errors** checkbox at the bottom of the screen.

9. Click the **Rebuild Unit** button. Expect a delay of approximately two minutes before the rebuild process begins.

10. Click on the **Home** tab at the top of the screen to return to the Home page, where you can monitor the process of the rebuild.

Once started, the process of rebuilding the array should take approximately 1.5 hours to complete. *Do not interrupt this process.*

The message "*Rebuild Complete*" is displayed next to the drive (on the Home page) when the process is finished.

At this point you can close the Disk Management Utility, and continue to use the server as usual. There is no need to reboot the server.

Step 4: Authenticate the New HDD

When an HDD is replaced in a MMS server, it must be authenticated before the system will play media content. HDDs are authenticated using two criteria, unique to each replacement HDD:

- *HDD Serial Number*: 8-characters, printed on a decal located on the bottom of the drive.
- *HDD Authentication Key*: 16-characters, printed on a piece of paper included with the new HDD.

Before the HDD can be authenticated to the server it must first be added into the array.

NOTE

The HDD authentication process is handled via the built-in user-interface on the MMS server which is accessible via the telnet window provided in WinMAX.

a) Open a telnet session with the MMS server:

1. Launch WinMAX, open the *System Information* tab, and verify that you are communicating with the intended MMS server by checking the *Server IP Address or URL* field.

2. Click on the **Server Configuration** button to open a telnet window.

3. After a brief delay, the *Admin Menu* is displayed (FIG. 48).

b) Authenticate the new HDD:

1. Select **Authenticate a New HDD** from the Admin Menu.

2. Enter the 8-digit serial number of the HDD. (printed on a decal located on the bottom panel of the HDD).

3. Enter the 16-digit authentication key supplied by AMX for that HDD (printed on a slip of paper included with the replacement drive).
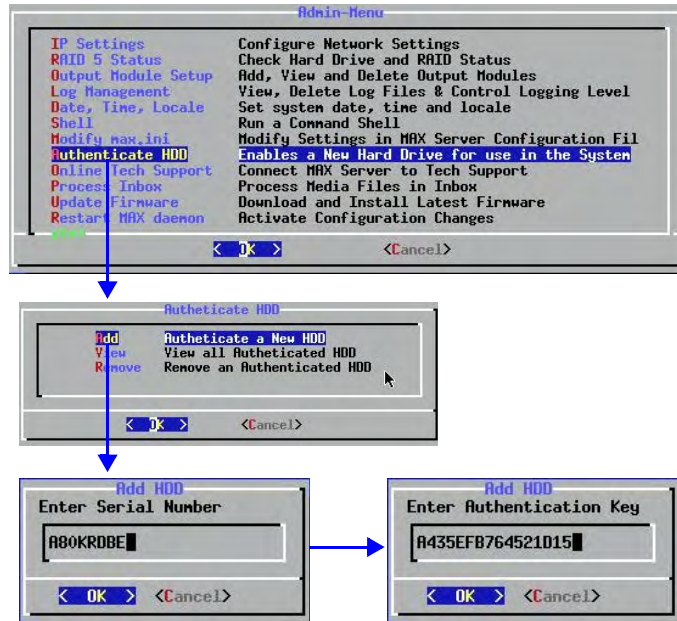
FIG. 48 Admin Menu, Authenticate HDD, and Add HDD dialogs

Replacing HDDs in HT Servers

The AMX line of MAX HT servers support hot-swappable 400GB hard disk drives (HDDs), accessible behind the faceplate on the front panel (FIG. 49). Typically a new HDD will be required only if an existing one has failed.

FIG. 49 MAX-HT12 Server (front panel)

Replacement HDDs are available from AMX (FG 2178-400).
Only HDDs provided by AMX can be used as replacements in HT servers, and in order to replace a HDD in an HT server, the drive must be installed and authenticated according to the steps outlined in this document.

There are several operations that are required to successfully replace an HDD in an HT server, all of which are described in this document:

1. The physical removal of the damaged HDD, and the subsequent installation of the replacement HDD.

2. Authentication of the new HDD with the server.

Step 1: Identify the Drive That Needs To Be Replaced

To identify the drive that needs to be replaced, access the MAX Admin Menu, via Telnet:

1. Launch WinMAX, open the *System Information* tab, and verify that you are communicating with the intended HT server by checking the *Server IP Address or URL* field.

2. Click on the **Server Configuration** button to open a telnet window. After a brief delay, the system prompts you to log in.

    By default, the *User Name = ROOT*, and the *Password = MOZART.*

3. Once you have logged in, the Admin Menu is displayed (FIG. 50).


```
                        MAX Admin-Menu
  System Information  View Server statistics & Information
  IP Settings         Configure Network Settings
  Output Module Setu  Add, View and Delete Output Modules
  RAID 5 Status       Check Hard Drive and RAID Status
  RAID 5 CLI          Manage & Rebuild RAID 5 Arrays
  Log Management      View, Delete Log Files & Control Logging Level
  Date, Time, Locale  Set system date, time and locale
  Shell               Run a Command Shell
  Modify max.ini      Modify Settings in MAX Server Configuration File
  Authenticate HDD    Enables a New Hard Drive for use in the Systemica
  Parental Control    Allows you to set a new master password
  Online Tech Suppor  Connect MAX Server to Tech Support


                          <  OK  >
```
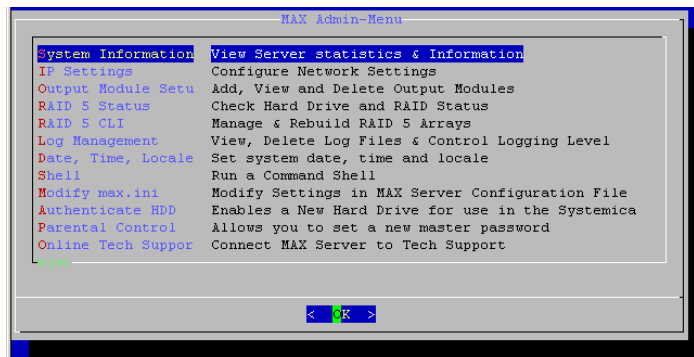
FIG. 50 Admin Menu

4. Select **RAID 5 Status**. This option displays a listing of HDDs in the HT server. Look for the drive that is labeled as "**Degraded**".

The drives on HT Servers are physically labeled with numbers on the front panel. HT04 Servers use drives labeled 1-4, and HT12 Servers use drives 1-12 (see FIG. 51). However, the drives are listed in the RAID 5 Status window (of the Admin Menu) starting with zero (0). Therefore, note that drive "0" in the Raid 5 Status window equates to the drive labeled "1" on the front of the HT server. Remember that each drive number in the Raid 5 Status list is offset by one relative to the labels on the front of the HT server.

Step 2: Physical Removal and Replacement of the Drives

There are two pieces of data that you must provide to complete the process of adding the replacement HDD: The new HDD's **Serial Number**, and **Key**.

- The *Serial Number* is printed on a label placed on the top of the HDD. The Serial Number is located directly beneath the barcode ("*S/N WXXXXXXXXXXX*").
- The 16-digit *Key* is printed on a slip of paper included with the HDD.

Be sure to record the Serial Number before inserting the new drive into the server.

1. Lower the faceplate on the front panel of the server. to access the HDDs (FIG. 47).

2. Remove the damaged HDD. Each HDD is mounted in a tray that slides in and out of the server. To remove the drive/tray assembly:

    a. Pull the latch forward to unlock the drive tray. Flip the hinged panel out and use it as a handle to gently pull the drive/tray assembly out of its slot.

    b. Remove the drive from the drive tray. The drive is secured to the tray with four screws on the bottom panel.
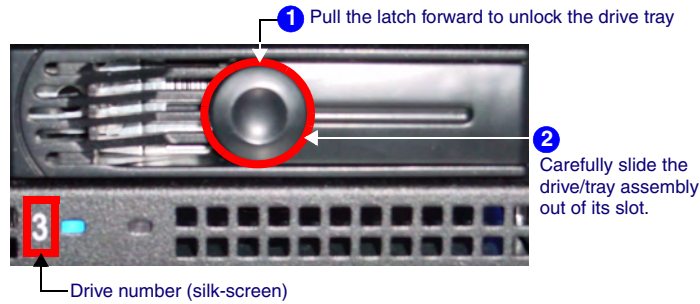
FIG. 51 Removable drive/tray assembly (front panel)

3. Install and secure the replacement drive into the drive tray.

4. Slide the replacement drive/tray assembly fully into the slot, and push the hinged latch back into its locked position. The LEDs on the front of the HDD should light to indicate that it has been connected and is communicating properly.

5. Return the faceplate to its locked position.

Step 3: Add the New Drive to the System

When an HDD is replaced in an HT server, it must be added to the system:

1. In the Admin Menu, select **Authenticate HDD**.

2. Select **Add**, then select **OK** to proceed to the **Add HDD** window.

3. Enter the **Serial Number** for the new drive.

   The Serial Number for each replacement drive is printed on a decal placed on the top panel of the HDD.

   When entering the Serial Number, use the following syntax (no quotes): "**WD-WXXXXXXXXXXX**"

4. Enter the 16-digit **Key** supplied by AMX for that HDD (printed on a slip of paper included with the replacement drive).

5. Select **Restart MAX Daemon** (in the Admin Menu).

6. **Note**: Restarting the MAX Daemon will disconnect WinMAX from the server.

7. Terminate the Telnet session.

The HT Server will rebuild the new drive and add it to the RAID array. There is no need to reboot the server; the new drive is ready to use.

MAX Admin Menu

Use the other options in the *Authenticate HDD* menu (accessible via the Admin Menu on the MMS), to manage all HDDs in the server, as shown in FIG. 48.
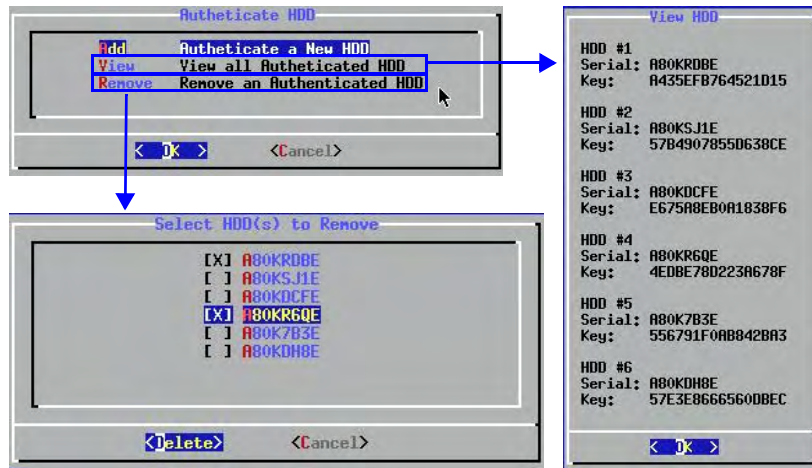
FIG. 52 Authenticate Menu - View HDD and Select HDD(s) to Remove dialogs

The options in the Authenticate HDD menu are described below:

- Add: Select to authenticate a new HDD, as described in the previous section.
- View: Select to view all the serial numbers and keys for HDDs in the system. Note that this list only indicates HDDs that have been successfully authenticated.
- Remove: Select to remove a selected HDD from the system. One or more drives can be removed at a time.

Refer to the *MAX Admin Menu* section on page 27 for more information.

Rack Mounting MAX Servers

CAUTION: Safety Instructions

Use the following safety guidelines to help ensure your own personal safety and to help protect your system and working environment from potential damage.

CAUTION

Installing systems in a rack without the front and side stabilizers installed could cause the rack to tip over, potentially resulting in bodily injury under certain circumstances. Therefore, always install the stabilizers before installing components in the rack.

After installing system/components in a rack, never pull more than one component out of the rack on its slide assemblies at one time. The weight of more than one extended component could cause the rack to tip over and may result in serious injury.

CAUTION

Do not move racks by yourself. Due to the height and weight of the rack, a minimum of two people should accomplish this task.

- Before working on the rack, make sure that the stabilizers are secured to the rack, extended to the floor, and that the full weight of the rack rests on the floor. Install front and side stabilizers on a single rack or front stabilizers for joined multiple racks before working on the rack.
- Always load the rack from the bottom up, and load the heaviest item in the rack first.
- Mounting of the equipment in a rack should be such that a hazardous condition is not achieved due to uneven loading of the rack.
- Make sure that the rack is level and stable before extending a component from the rack.
- Use caution when pressing the component rail release latches and sliding a component into or out of a rack; the slide rails can pinch your fingers.
- After a component is inserted into the rack, carefully extend the rail into a locking position, and then slide the component into the rack.
- Do not overload the AC supply branch circuit that provides power to the rack. The total rack load should not exceed 80 percent of the branch circuit rating.
- Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of circuits could have on overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.
- Reliable earthing of rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch (e.g. use of power strips).
- The socket outlet shall be installed near the equipment and shall be easily accessible.
- Ensure that proper airflow is provided to components in the rack. If installed in a closed or multi-unit rack assembly, the operating ambient of the rack may be greater than room temperature. Therefore, consideration should be given to the overall temperature of the rack.
- Do not step on or stand on any component when servicing other components in a rack.

## Rack Mounting MMS-01S/02S/02SB/04S/12S Servers

MMS-01S, -02S, -02SB, -04S and -12S servers come with a Rack-Mounting Kit, which includes the hardware required to mount the servers in a standard 19-inch (48-cm) rack.

MMS-900 Servers use a more heavy-duty version of the installation kit to accommodate their size and weight. The Rack-Mounting Kit that comes with the MMS-900 comes with its own installation instructions.

Each Rack Rail Installation Kit supports one server, and the parts included in the rack rail hardware kit include:

- Two Outer Slide Rails
- Two Inner Server Rails
- Two Long Extension Brackets
- Two Short Extension Brackets
- Four 3-hole Locking Plates (with large holes)
- Four 3-hole Locking Plates (with small holes)
- Variety of screws (20 large, 20 small/long and 20 small/short)
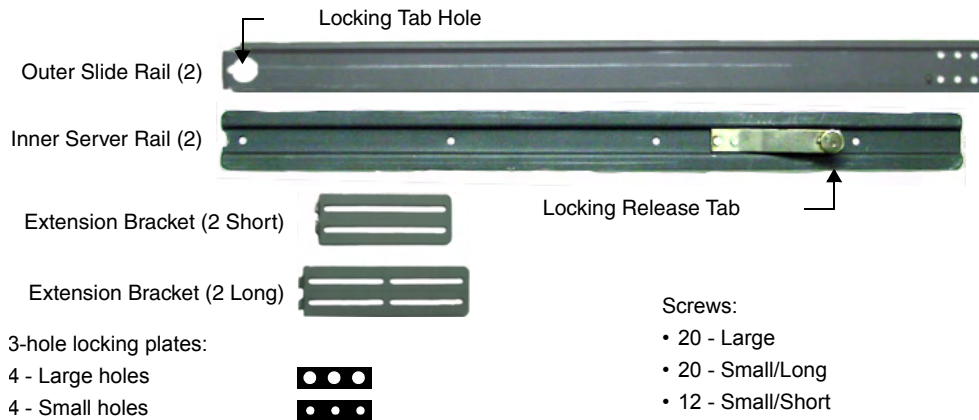
FIG. 53 Included Rack-Mounting Kit Parts

You may not need all the parts included in the rack rail hardware kit for every installation. You may have some parts left over.

The basic steps for installing the MMS server into a rack are:

1. Prepare the Slide Rail Assemblies: The Inner and Outer Rails must be separated before they can be attached to the MMS and the rack.
2. Attach the Inner Server Rails to the MMS Server.
3. Attach the Extension Brackets to the Outer Slide Rails.
4. Install the Outer Slide Rails in the server.
5. Slide the server (with Inner Server Rails attached) into the Outer Slide Rails in the rack.

Each step is described in more detail in the following subsections.

Step 1: Prepare the Slide Rail Assemblies

The two Outer Slide Rails, and two Inner Server Rails come assembled in the rack rail hardware kit. You must separate these pieces before beginning. The Inner Server Rails will be attached to the MMS chassis.

To detach the server rails from the slide rail assemblies:

1. Place the two slide rail assemblies on a flat surface.
2. Extend the Inner Server Rail from the slide rail assembly until the Inner Server Rail release latch clicks and locks.
3. Holding down the latch on the back side of the Inner Server Rail, slip the server rail out of the inner slide.
4. Repeat Steps 2 and 3 for the second slide rail assembly.

Set the Inner Server Rails aside. You will attach them to the MMS chassis (as described in the next section).

Step 2: Attach the Inner Server Rails to the MMS chassis

The inner slide rails attach to the MMS server chassis, with the locking Release Tab facing out from the server, as indicated in FIG. 54.

Slide the notched end of the rail under the tab in the front of the server and screw into place towards the rear of the rail using the *small/short* screws (four per side).
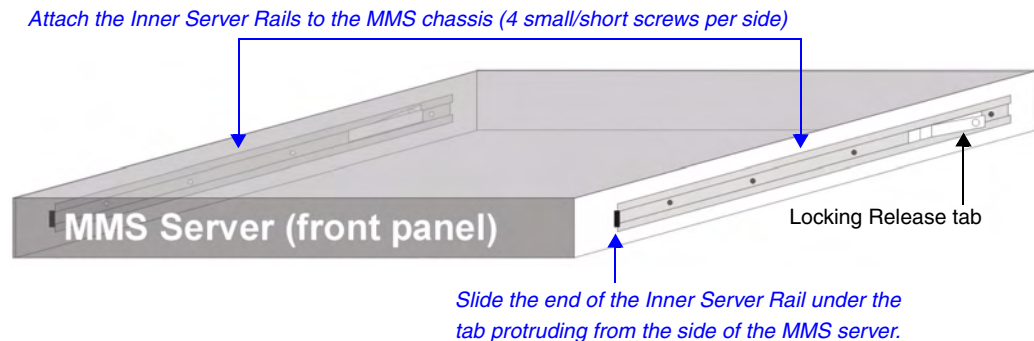
Attach the Inner Server Rails to the MMS chassis (4 small/short screws per side)

Locking Release tab

Slide the end of the Inner Server Rail under the tab protruding from the side of the MMS server.

FIG. 54 Attaching the Inner Server Rails to the MMS chassis

Step 3: Attach the Extension Brackets to the Outer Rails

The Extension Brackets attach to the outer rails (using the 3-hole locking plates). You will choose either the *Short* Extension Brackets, or the *Long* Extension Brackets, depending on the depth of the rack you are mounting the MMS into.

1. Attach the *Extension Bracket* to the *Outer Rail* using the s*mall/long screws* and a 3-hole Locking Plate, as shown in FIG. 55. Select the type of locking plate (large or small holes) that works best with the rack you are using.

   Depending on the type of rack you are using, you may need to use Extension Brackets on the front of the server as well.

2. The feet of the Extension Bracket are placed at the end of the rail. The type of cabinet/rack you are using will dictate whether the Extension Bracket feet should point in towards the server or out towards the rack.

3. Repeat the process for the opposite Outer Rail.
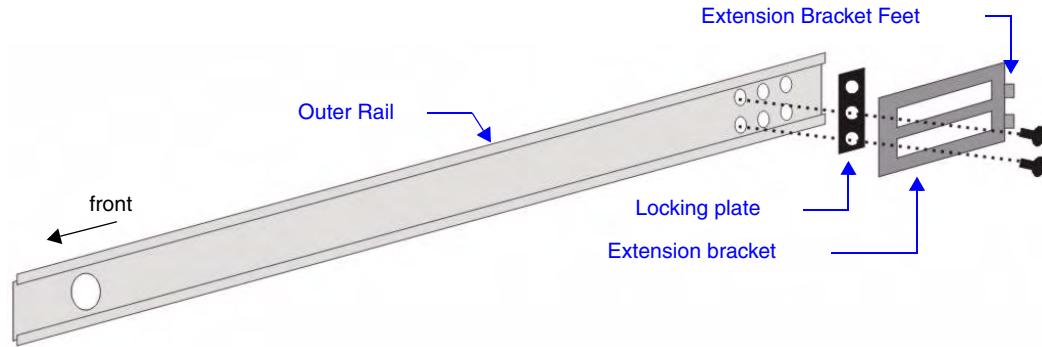
FIG. 55 Attaching the Extension Bracket to the Outer Rail (using a Locking Plate)

Step 4: Install the Outer Rail/Extension Racket Assemblies In the Rack

Once both of the Outer Rail/Bracket assembles (from the previous step) are prepared, they can be installed into the rack cabinet. Follow these steps for both of the Outer Rail/Bracket assemblies:

1. Insert the Outer Rail/Bracket assembly into the rack. Make sure that the Extension Bracket is situated towards the rear of the rack.
2. Attach the rear end of the Outer Rail/Bracket assembly to the rack with two screws, (securing the Extension Bracket, Locking Plate and Outer Rail to the rear flange of the rack cabinet).
3. Align the front of the Outer Rail/Bracket assembly to the front flange on the rack, and secure using two screws.

Step 5: Load the MMS Server Into the Rack

Once the Outer Rail/Bracket assemblies have been installed in the rack cabinet, the MMS server can slide into the rack, using the Inner Server Rails (already attached to the server chassis):

1. Carefully align the front of the Outer Slide Rails (in the rack) with the Inner Server Rails (on the MMS server chassis).
2. Slowly slide the MMS server, into the outer slide rails. *Keep the MMS parallel to the floor when sliding the server rails into the slide rails. Tilting the server up or down could result in damage to the slide rail assembly.*
3. Push the locking tabs in to lock into place. The MMS server slides into the rack until the Locking Release Tabs on the Inner Server Rails engage the Outer Slide Rails.

    Be careful when pressing the Inner Server Rail release latches and sliding the server into the rack. The slide rails could pinch your fingertips.
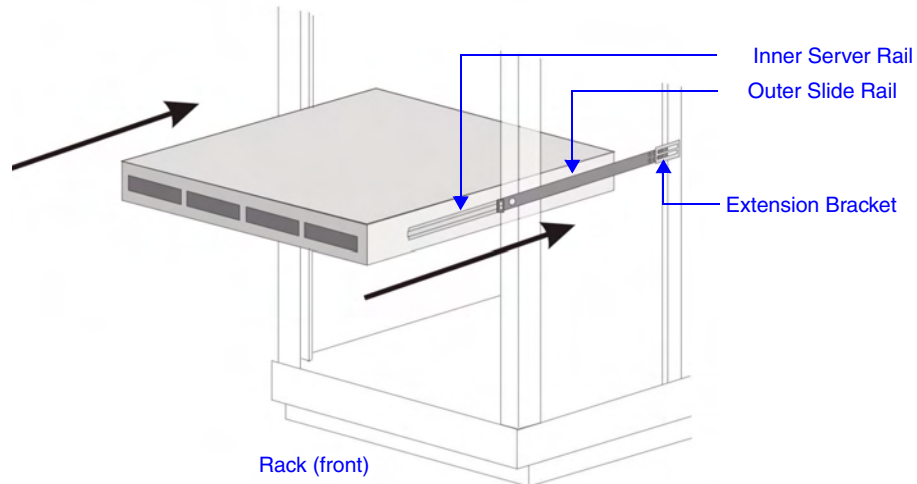
FIG. 56 Sliding the MMS server chassis into the rack

Rack Mounting HT and MMS-900 Servers

Each MAX-HT server comes with a Rack-Mounting Kit. Each Rack-Mounting Kit supports one server and includes all hardware required to mount HT servers in a standard 19-inch (48-cm) equipment rack. The parts included in the Kit include:

- 2 Slide Rail Assemblies (each consists of a *Stationary section*, an I*ntermediate section* and a *Chassis section*; pre-assembled for shipping)
- 2 Extension Brackets
- 2 End Brackets
- 6 Locking Plates (4-hole) - *not required*
- 4 Adapter Bars (9-hole)
- 10 flat-head screws, 10 round-head screws

Screws: 10 round head, 10 flat head, 10 locking nuts
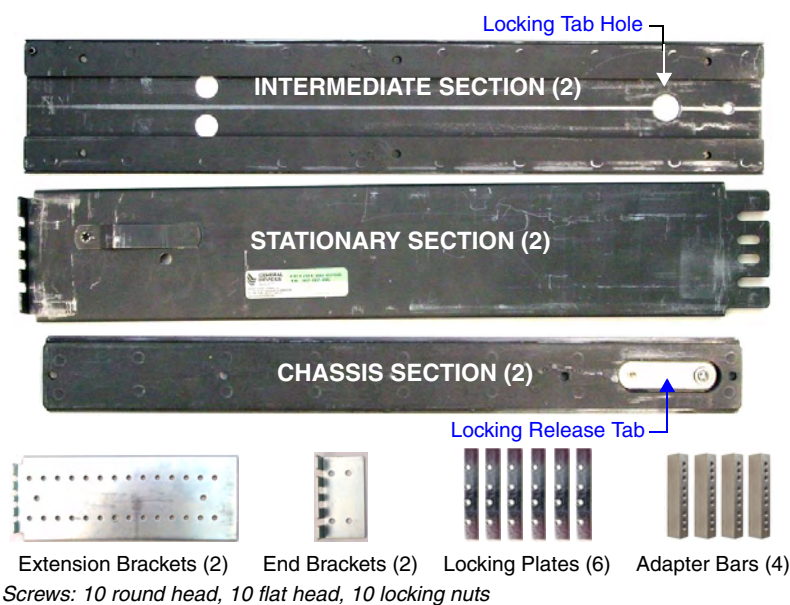
FIG. 57 Included Rack Kit Parts

You may not need all the parts included in the kit for every installation.

Before you begin, disassemble the Slide Rail Assemblies: the Stationary, Intermediate and Chassis sections must be separated before they can be attached to the server and rack.

CAUTION: Safety Instructions

Use the following safety guidelines to help ensure your own personal safety and to help protect your system and working environment from potential damage.

CAUTION: Installing systems in a rack without the front and side stabilizers installed could cause the rack to tip over, potentially resulting in bodily injury under certain circumstances. Therefore, always install the stabilizers before installing components in the rack.

After installing system/components in a rack, never pull more than one component out of the rack on its slide assemblies at one time. The weight of more than one extended component could cause the rack to tip over and may result in serious injury.

CAUTION: Do not move racks by yourself. Due to the height and weight of the rack, a minimum of two people should accomplish this task.

- Before working on the rack, make sure that the stabilizers are secured to the rack, extended to the floor, and that the full weight of the rack rests on the floor. Install front and side stabilizers on a single rack or front stabilizers for joined multiple racks before working on the rack.
- Always load the rack from the bottom up, and load the heaviest item in the rack first.
- Make sure that the rack is level and stable before extending a component from the rack.
- Use caution when pressing the component rail release latches and sliding a component into or out of a rack; the slide rails can pinch your fingers.
- After a component is inserted into the rack, carefully extend the rail into a locking position, and then slide the component into the rack.
- Do not overload the AC supply branch circuit that provides power to the rack. The total rack load should not exceed 80 percent of the branch circuit rating.
- Ensure that proper airflow is provided to components in the rack.
- Do not step on or stand on any component when servicing other components in a rack.

Step 1: Install Chassis Sections Onto The Server Chassis

The Chassis Sections mount directly to the server chassis, using the middle row of screws on the server chassis.

The server has plastic plugs in the holes that you will use to attach the Chassis Sections, to keep the server chassis sealed in case the server is not rack-mounted.
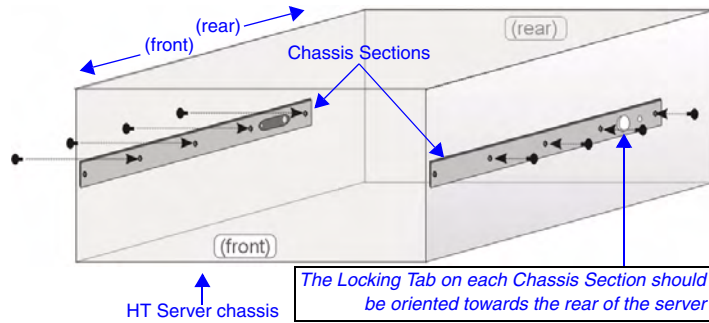
To see how these parts will mount, visually align the Chassis Sections with the middle row of plugs on each side of the server, so that the four screw holes on the Chassis Section rail align with the middle row of plugs on the server.

Make sure to orient the Chassis Sections so that the locking tab button is facing outwards, and located toward the rear of the server.
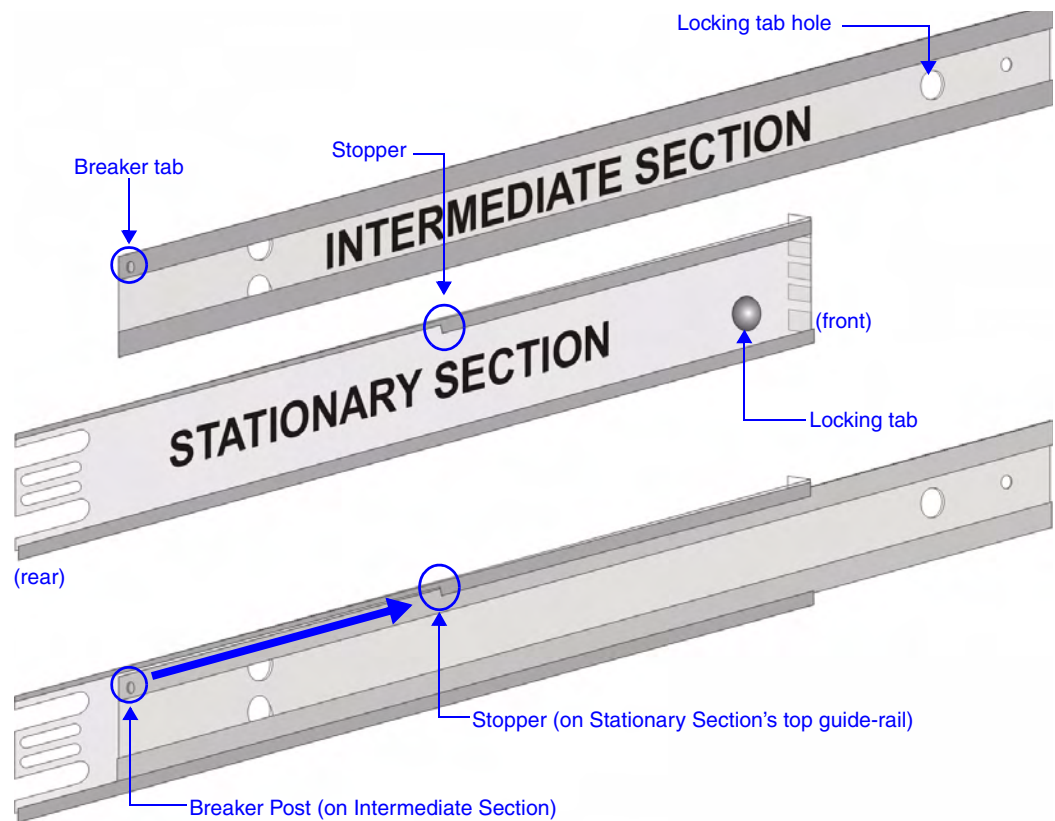
1. Remove the four plastic plugs from each side of the MAX server.
2. Install the chassis sections onto the MAX server chassis using 4 flat-head PHILLIPS screws (included) per side, as shown in FIG. 58.

(rear)
(front)
Chassis Sections
(rear)
(front)
HT Server chassis
The Locking Tab on each Chassis Section should be oriented towards the rear of the server

FIG. 58 Attaching the Chassis Sections to the server chassis

Step 2: Slide Intermediate Sections Into the Stationary Sections

1. Slide the Intermediate Section into the Stationary Section, from the rear end of the Stationary Section, as shown in FIG. 59.

2. Press the Locking Tab on the Stationary Section to allow the Intermediate Section to slide fully into place.

Locking tab hole
Breaker tab
Stopper
INTERMEDIATE SECTION
STATIONARY SECTION
(front)
Locking tab
(rear)
Stopper (on Stationary Section's top guide-rail)
Breaker Post (on Intermediate Section)

FIG. 59 Sliding the Intermediate Section into the Stationary Section

3. Slide the Intermediate Section in, to the point that the Breaker tab on the Intermediate Section rests against the Stopper on the top guide-rail on the Stationary Section, and the locking tab snaps into place.
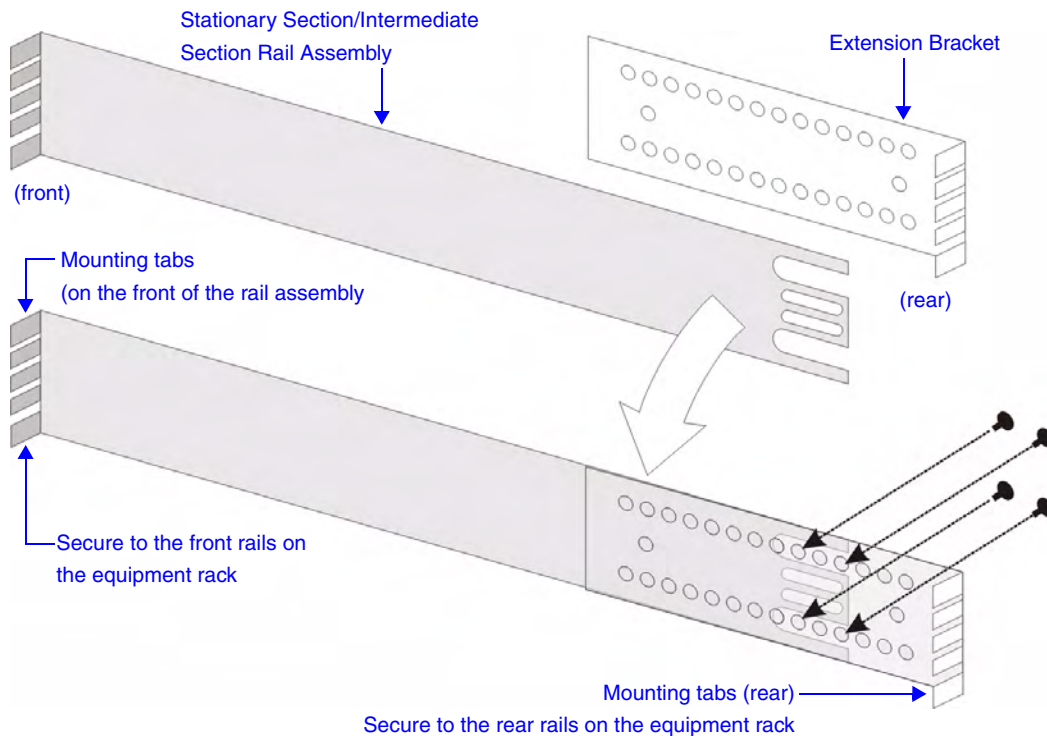
Step 3: Attach the Extension Brackets

With the Intermediate and Stationary Sections together, you can now attach the Extension Brackets. The Extension Brackets attach to the rear end of the Stationary Section, and allow the Rail Assembly to be anchored to the rear of the equipment rack.

Note that the Extension Brackets are designed to accommodate a range of depths. Attach the brackets to the Rail Assemblies so that the rear mounting tabs reach the rear of the equipment rack, while the front mounting tabs reach the front of the rack.

1. Measure (or estimate) the depth required by your equipment rack, to get an idea of how far forward or back the Extension Bracket should be mounted on the Rail Assemblies.

    Depending on the space required, you may choose to use the End Brackets rather than the Extension Brackets.

2. Loosely mount the Extension Brackets to the Rail Assemblies, using the (included) round-head screws, as shown in FIG. 60.

    ● Do not tighten the screws until the assembly is mounted into the rack.

Stationary Section/Intermediate Section Rail Assembly

Extension Bracket

(front)

Mounting tabs (on the front of the rail assembly

(rear)

Secure to the front rails on the equipment rack

Mounting tabs (rear)
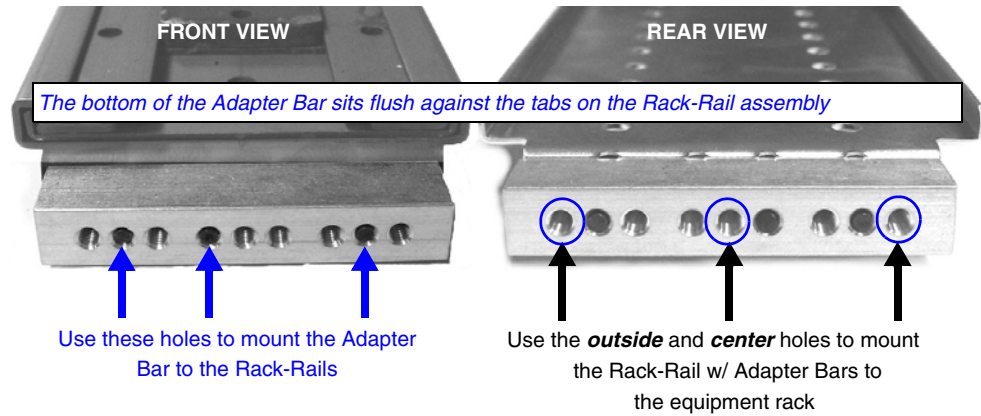
Secure to the rear rails on the equipment rack

FIG. 60 Attach the Extension Brackets to the Stationary/Intermediate Sections

● Verify that the mounting tabs on the Rail Assemblies and the Extension brackets are facing the same direction. The mounting tabs are used to secure the assembly to the vertical mounting rails on the equipment rack.

Step 4: Mount the Adapter Bars to the Rack-Rail assemblies

1. Use the included mounting hardware to attach an Adapter Bar to the front and rear of each of the two Rack-Rail assemblies:

    To ensure a proper fit, make sure that each Adapter Bar is mounted flush against all sides of the tabs on the Rack-Rail assembly. When the Adapter Bar is seated properly against the tabs on the front of the Rack-Rails, the bottom of the Adapter Bar should be flush with the bottom of the Rack-Rail (FIG. 61).

FRONT VIEW   REAR VIEW

The bottom of the Adapter Bar sits flush against the tabs on the Rack-Rail assembly

Use these holes to mount the Adapter Bar to the Rack-Rails

Use the *outside* and *center* holes to mount the Rack-Rail w/ Adapter Bars to the equipment rack

FIG. 61 Adapter Bar mounted to the front of the Rack-Rail assembly

2. Attach an Adapter Bar to the rear of each of the two Rack-Rail assemblies (FIG. 62). Once the Adapter Bars have been attached to the front and rear of both Rack-Rail assemblies, the Rack-Rails are ready to use.

Mounting rails on equipment rack

Adapter Bar

(front)

Rail Assembly

Adapter Bar

(rear)
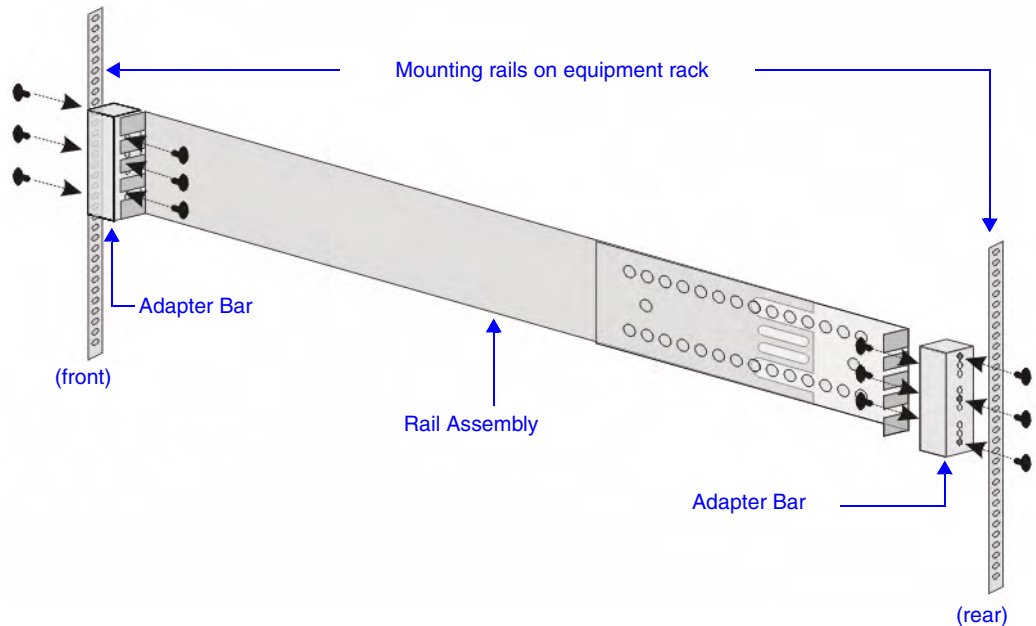
FIG. 62 Mount the Adapter Bars to the Rail assemblies

Step 5: Mount the Rail/Bracket Assemblies Into the Equipment Rack

Once the Extension Brackets (or End Brackets) and Adapter Bars have been attached to the Rail Assemblies, the Rail/Bracket Assemblies are ready to be mounted into the equipment rack.
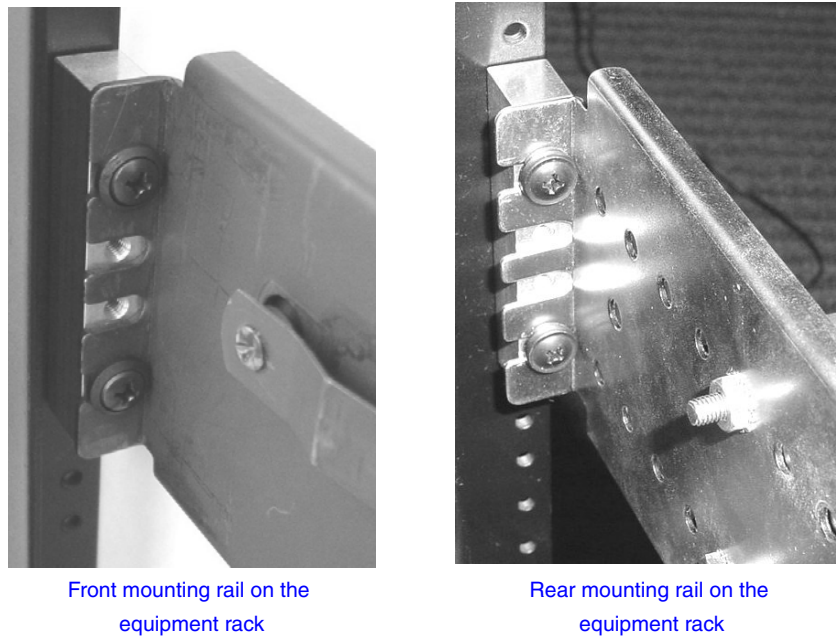
Install the Rack-Rail assemblies into the equipment rack, aligning the holes on the Adapter Bars to the mounting rails in the rack as shown in FIG. 63:
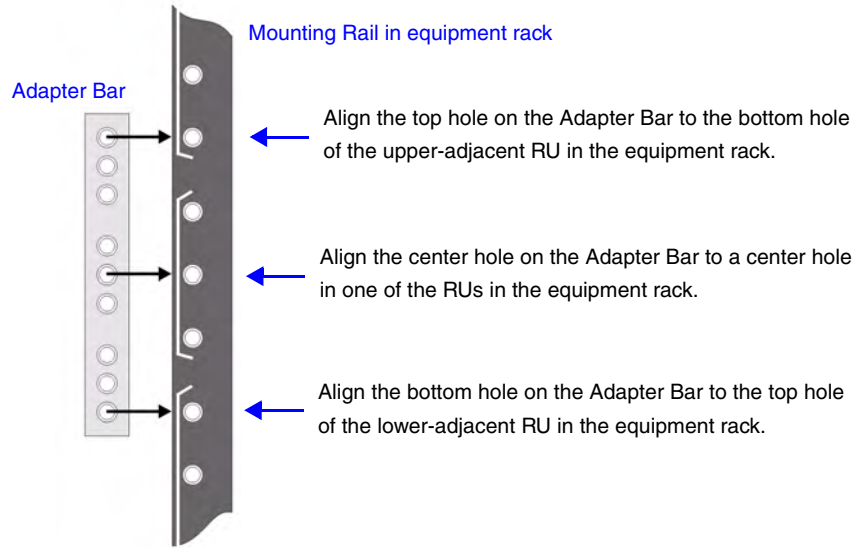
FIG. 63 Align the holes on the Adapter Bar to the holes on the rails in the equipment rack

FIG. 64 shows the Adapter Bars properly mounted to the Rack-Rail assemblies and vertical mounting rails in the equipment rack:
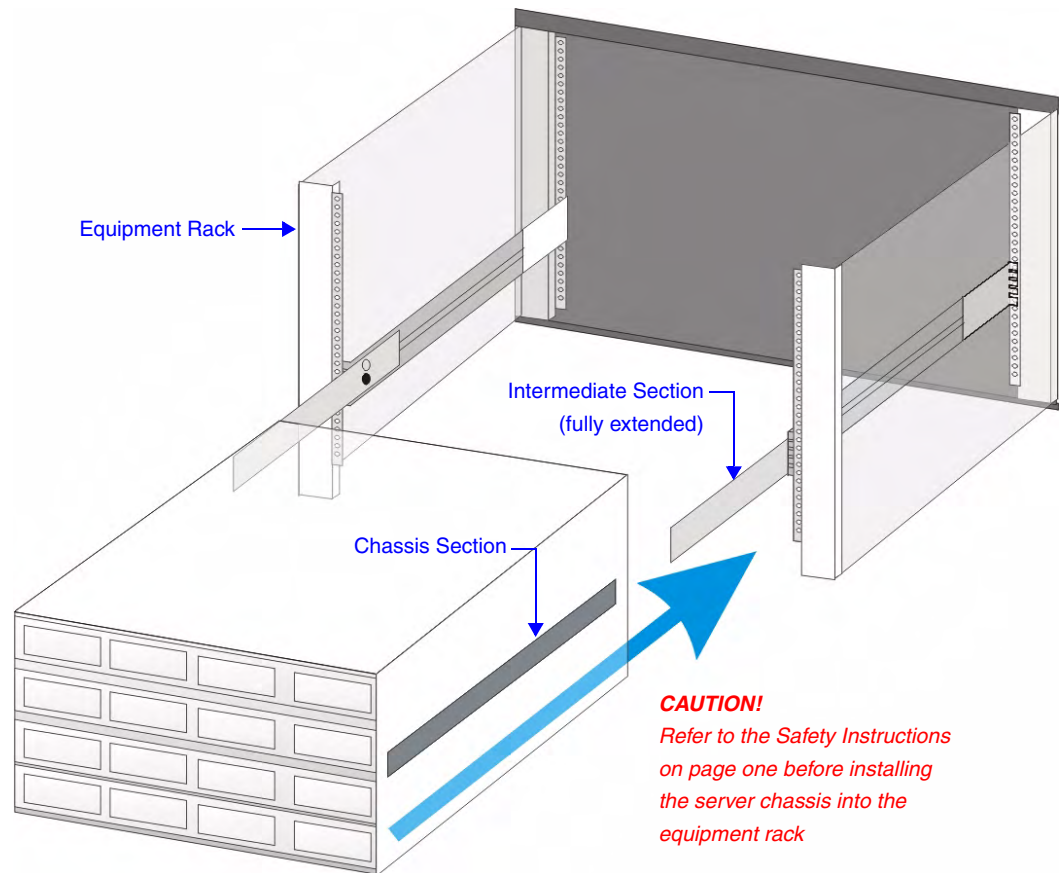

Front mounting rail on the equipment rack

Rear mounting rail on the equipment rack

FIG. 64 Adapter Bars mounted to the equipment rack

Step 6: Load the HT Server Into the Rack

Once the Rail Assemblies have been installed into the equipment rack cabinet, the server can be mounted on the rails and slid into the rack (FIG. 65):

1. Slide the Rails (Intermediate Sections) out to their fully extended position.
2. Carefully align the Chassis Sections (mounted on the HT server) with the extended Rails.
3. Slide the server onto the extended rails. *Keep the server parallel to the floor when sliding the server rails into the rails. Tilting the server up or down could result in damage to the Slide Rails.*

4. Carefully slide the server into the rack until the Locking Release Tabs on the Chassis Sections (in the equipment rack) engage the Intermediate Section Rails, securing the server in place.

Equipment Rack

Intermediate Section
(fully extended)

Chassis Section

CAUTION!
Refer to the Safety Instructions on page one before installing the server chassis into the equipment rack

FIG. 65 Sliding the server chassis into the rack

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